JOURNAL
OF THE
AMERICAN VETERINARY MEDICAL ASSOCIATION

In This Issue

Volume CXVIII MAY 1951 Number 890

The Century's First Fifty Years

I. Historically Famed for Medical Progress

Since the turn of the century, the four great spheres of medical science—*chemical, biologic, dietetic, endocrinous*—were welded together for use as an inseparate unit in the practice of medicine. No one of these, alone, would fulfill the purpose of our time.

The prescriptions of former days were discarded for "drugs of precision" (sulfonamides, antibiotics); the bioprophylactics of Pasteur were replaced by controlled serums and vaccines; the discovery of vitamins, amino acids, and trace minerals brought dietetics to the threshold of an exact science; and the new physiology of hormones revolutionized the therapy of somatic disorders.

Summed up, in the face of the world's precarious food supply, these historic advancements invest weighty responsibilities on the veterinary profession's clinical and commercial personnel that the faithful do not feign to ignore.

(To be continued)

THE
Corn States Serum Company
OMAHA, NEBRASKA

Journal of the American Veterinary Medical Association

CONTENTS

(*Continued from Cover*)

SURGERY AND OBSTETRICS

CLINICAL DATA

NUTRITION

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Published monthly at 600 S. Michigan Ave., Chicago, Ill., by the American Veterinary Medical Association. Entered as second class matter August 10, 1932, at the Post Office at Chicago 5, Illinois, under the act of March 3, 1879. Additional entry at Mendota, Ill. Accepted for mailing at special rate of postage provided for in Section 538, act of February 28, 1925, authorized August 10, 1932. Reprints should be ordered in advance. Prices will be quoted after publication. Please send prompt notice of change of address, giving both old and new. Advise whether the change is temporary or permanent. Address all correspondence to American Veterinary Medical Association.

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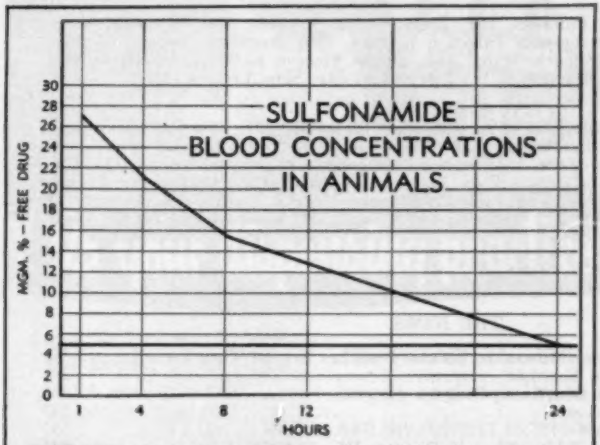

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AVMA ☆ Report

Veterinary Medical Activities

✦ Drs. J. G. Hardenbergh and C. D. Van Houweling met again with the Committee on Local Arrangements in Milwaukee on March 20, 1951. Plans for the 1951 convention are progressing rapidly. Applications for exhibit space have exceeded all previous records. All booths were reserved two weeks after the announcements and space diagrams were mailed to prospective exhibitors.

* * *

✦ Dr. S. W. Haigler, chairman, AVMA Ethics Committee, urges veterinary medical associations to use the strip film, "The Golden Rule for Veterinarians," when discussing ethics at their meetings. This strip film can be obtained from the AVMA office, 600 S. Michigan Ave., Chicago 5, Ill.

* * *

✦ The parasites exhibit (cysticercosis-trichinosis), originally shown at the American Medical Association last June, was exhibited at the Iowa Spring Market Hog Show in Cedar Rapids, March 9-10, 1951, through the efforts of Dr. J. B. Bryant, who served as chairman of the Exhibit Committee of the Eastern Iowa Veterinary Medical Association.

* * *

✦ The AVMA panel exhibit—depicting various phases of the profession's work—was shown at Tuskegee Institute's Annual Food Show, April 5-6, 1951, as a project of the School of Veterinary Medicine.

* * *

✦ Members of the Special Committee on Food and Milk Hygiene met at the AVMA office on April 13, 1951, to review developments, particularly new federal regulations for poultry inspection, and to prepare their annual report. Those attending included Drs. H. E. Kingman, Jr., chairman, J. W. Cunkelman, R. J. Helvig, C. L. Kern, C. H. Pals, and B. C. Pier.

* * *

✦ Drs. W. R. Krill, J. T. Schwab, C. D. Van Houweling, and Asa Winter, members of the Executive Committee of the AVMA Emergency Advisory Committee, met in the AVMA conference room on March 17-18, 1951. Also present were Drs. M. R. Clarkson, C. H. Hays, A. G. Misener, and Executive Secretary Hardenbergh.

* * *

✦ The Committee on Fellowships of the Research Council held its regular spring meeting at Association headquarters on April 29, 1951. The status of the six current fellowships were reviewed and applications for new projects to be activated during the next academic year were passed upon. Attending the meeting were Drs. M. A. Emmerson, chairman, L. E. St. Clair, secretary, C. A. Brandly, James Farquharson, L. C. Ferguson, L. M. Roderick, and C. F. Schlotthauer.

* * *

✦ Dr. W. A. Hagan, secretary of the AVMA Council on Education, represented the Association at a conference of the National Commission on Accrediting in Chicago on April 1, 1951. Executive Secretary Hardenbergh and Assistant Executive Secretary Van Houweling also attended. The National Commission on Accrediting is a new organization representing the colleges and universities which have schools or departments operating under the various accrediting systems conducted by numerous agencies in this country.

* * *

✦ Dr. W. E. Logan, AVMA representative to the National Livestock Loss Prevention Board, attended the annual meeting of the Board in Chicago, Feb. 27-28, 1951. An item in the News Section tells of the recent reorganization of the N.L.L.P.B., now known as Livestock Conservation, Inc. Dr. W. A. Young, the Association's treasurer, is the secretary of the new organization.

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**J. David Schaffer: Veterinary Use of Chlorophyll in Tissue Cell Stimulation, No. Amer. Vet. 31 (1950), 817*

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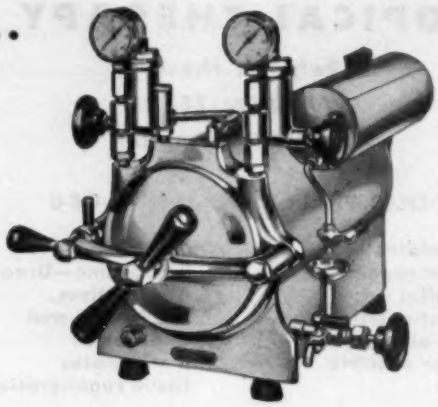

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It is a question of importance for all concerned with the care and feeding of dogs whether these other foods actually equal PARD. Swift believes that discoverable facts should be presented. Do other dog foods widely sold today meet the standards set by PARD? Can they give the dog—through every stage of life, in lactation and reproduction—*all* the nutrition, in proper balance, that he needs for optimum health and vigor?

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The scores in the table are based on actual amounts. The food scoring highest in a nutrient was given 10. A *star* indicates adequacy for perfect nutrition, according to standards established after years of research by Swift scientists and proven beyond doubt by feeding tests on generations of dogs.

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PARD	9.5*	10.0*	8.8*	10.0*	★★★★
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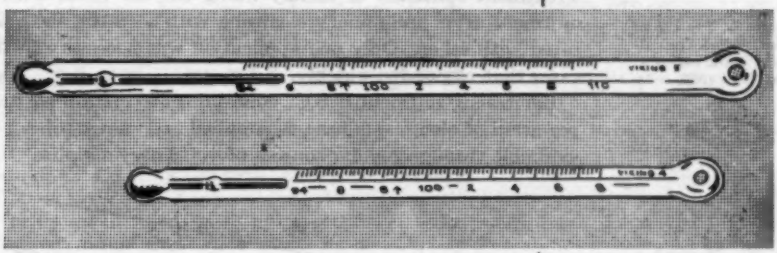

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*Ross, H. T.: The Use of Bacitracin in Small Animal Medicine, J. Am. Vet. M.A. *117*:306 (Oct.) 1950.

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Farmer's Question Corner

PREPARED BY
American Foundation For Animal Health

What About Hog Cholera?

Q: Is cholera still the worst swine killer?

A: Yes, it is the most serious and fatal of all known swine diseases. It is almost always fatal.

Q: Is cholera caused by a germ?

A: No, it is caused by a virus, so small it cannot be seen with the microscope. Human smallpox, influenza and infantile paralysis are also caused by viruses.

Q: How much of the virus does it take to kill a hog?

A: As little as fifteen drops of virus could give cholera to a million head of hogs under experimental tests.

Q: How does a cholera outbreak start?

A: Usually there is no warning. Pigs go off feed, act slow, do-nothing, hide in the bedding, have [illegible] vomit, scour, may look like cholera.

Q: What is the best way to avoid cholera losses?

A: There is no known cure. The best plan is to have pigs vaccinated near weaning time. Only healthy pigs should be vaccinated. This is one reason why authorities advise that vaccination should be done by a veterinarian.

Q: What precautions should be taken with vaccination?

A: Aftercare of the vaccinated herd is of special importance; therefore follow the veterinarian's directions to the letter. Give vaccinated pigs clean quarters and range away from old yards. Avoid night piling or poorly ventilated hog houses. Provide ample drinking water and shade in hot weather.

NOTE—Due to space limitations, general questions cannot be han-

Farmer's Question Corner

PREPARED BY
American Foundation For Animal Health

What About Rabies?

Q: What is rabies?

A: It is a fatal, virus-borne disease which can affect both animals and human beings.

Q: How is it spread?

A: The virus of rabies is usually spread by the bite of an animal suffering from rabies. The saliva from a rabid animal contacting the eye or through scratches or cuts on the skin, can also spread it.

Q: What animals get rabies?

A: It is most common in dogs. However, farm livestock, wolves, foxes, coyotes, cats, squirrels and skunks may develop rabies.

Q: What does rabies look like?

A: Suspect rabies when dogs and livestock don't behave normally. Gentle animals may become pugnacious. Dogs may either have dumb rabies, which appears like a bone in the throat and a paralyzed lower jaw; or furious rabies where the animal wants to bite anything within reach.

Q: Can the disease be prevented?

A: There is a very effective vaccine used by veterinarians to prevent the disease in dogs—also to protect valuable livestock in rabies areas.

Q: What should one do if rabies is suspected?

A: Contact a veterinarian immediately. Confine any suspect dog or farm animal. If a person is bitten call a physician at once.

Q: Can rabies be cured?

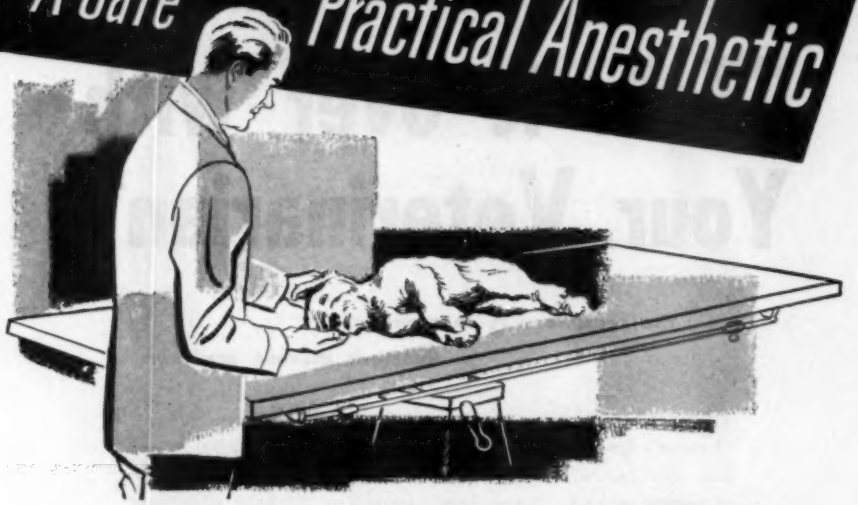
A: It is almost always fatal, but can generally be prevented by protective vaccination.

Q: How should a dog or other rabid animal that is biting livestock be destroyed?

A: Kill it by shooting, but never through the head. This damages the brain for testing in the laboratory. If an animal can be confined until death this permits more accurate diagnostic laboratory results.

NOTE—Due to space limitations, general questions cannot be handled in this column.

A Safe Practical Anesthetic



in the Small Animal Field

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Journal
of the
American Veterinary Medical Association

VOL. CXVIII MAY, 1951 NO. 890

Variations (Variants) of Hog Cholera Virus

C. N. DALE, M.A., D.V.M.; H. W. SCHOENING, V.M.D.; C. G. COLE, D.V.M.; R. R. HENLEY, B.S., M.S.; M. R. ZINOBER, D.V.M.

Washington, D. C.

SINCE ITS development by Dorset, McBryde, and Niles,* the simultaneous method of vaccination against hog cholera—treatment with serum and virus—has been extensively used in the United States and is one of the factors responsible for the great development of the swine industry in this country. Despite this fact, for a number of years unfavorable results following vaccination have occurred in certain herds from time to time. These results have been of minor importance when compared with the successful vaccinations in large numbers of swine. Nevertheless, they have been a matter of concern and have been the subject of study over the years.

Various reasons have been advanced for these adverse reactions, commonly known as "breaks." Among them are impotent serum, other diseases, unthriftiness, nutritional disturbances, and heavy parasitism. The exact cause, however, has not been determined. Undoubtedly, the various conditions mentioned above may at times play a part in adverse reactions following simultaneous vaccination. Since the passage of the Virus-Serum Toxin Act in 1913, the preparation of all the serum and virus produced commercially for interstate shipment has been under the direct supervision of the Bureau of Animal Industry, and exact standards for testing for purity and potency have been developed that are rigidly adhered to by the producers. No product is marketed until it has passed the prescribed tests.

Since 1913, these so-called "early breaks" have been the subject of numerous investigations by this Division, and tests of serums and viruses used in a number of these breaks have been made. Prior to 1949, attempts to reproduce the conditions reported in the field had been unsuccessful. The association of other diseases with the vaccination procedures has also been studied experimentally without success. In the summer of 1949, serious losses were reported in the Cornbelt following the use of serum and virus. These losses were investigated in the field, and materials were collected and laboratory studies were undertaken at both the Pathological Division's Animal Disease Station at Beltsville and its Hog Cholera Research Station at Ames, Iowa. A similar situation occurred in the summer of 1950 when losses were again reported following vaccination with serum and virus. Field and laboratory studies were again undertaken. Since the greater part of the laboratory work involved the use of swine highly susceptible to hog cholera and the use of a highly infective agent, special facilities and the utmost sanitary precautions and procedures were required to carry out the work. In all, more than 2,000 experimental swine have been used in tests conducted either at Beltsville or at Ames, Iowa.

The reports from the field showed that trouble was encountered following the use of certain lots of hog cholera virus and serum. The use of some serials of virus quite regularly resulted in untoward reactions in the herds that were investigated. In some herds, all the animals were affected, in others only a few became sick, and in still others no adverse effects were observed or reported. Most of the affected animals sickened six to ten days after treatment. In our field and lab-

Presented at the meeting of the Southwestern Iowa Veterinary Medical Association, Council Bluffs, April 3, 1951.

From the Pathological Division, Bureau of Animal Industry, Agricultural Research Administration, U. S. Department of Agriculture, Washington, D.C. Dr. C. G. Cole is in charge of the Hog Cholera Research Station at Ames, Iowa, and Dr. M. R. Zinober is stationed at the Animal Disease Station, Beltsville, Md.

The authors express their appreciation to J. P. Torrey, B.S., M.S., D.V.M., for assistance in carrying out some of the work reported.

*Dorset, M., McBryde, C. N., and Niles, W. B.: Further Experiments Concerning the Production of Immunity from Hog Cholera. BAI Bull. 102, 1908.

oratory investigations, the symptoms and lesions found were similar to those produced by the virus of hog cholera. At times, symptoms not usually seen in hog cholera were observed, but these had also been previously observed in occasional hog cholera cases or were not typical of the over-all picture. Serum and virus used in the field in connection with losses were collected and then examined in the laboratory. Inoculations of these materials into mice, rabbits, and guinea pigs and through cultural methods failed to reveal the presence of extraneous viruses or pathogenic bacteria. These findings apply to all the samples of hog cholera viruses examined.

On the basis of the field observations and the laboratory findings, it was concluded that a variant form of hog cholera virus was one of the factors responsible for some of the losses in the field in 1949 and 1950.

Virus Types and Variants

Immunologically distinct types of virus and variants within types have received considerable attention in recent years and have become well established through experimentation. It will be recalled that three well-known types of foot-and-mouth disease viruses are immunologically distinct. That is, an animal recovered from one type, "A" for example, is resistant to reinfection with type A, but is readily infected with types O and C. In other words, it is immune only to its homologous type. Likewise, in equine encephalomyelitis there are two immunologically distinct types, eastern and western, and animals immune to one type are readily infected with the other. Antiserum also is specific. That is, if an animal is to be protected against eastern type, serum prepared from the eastern type virus must be used. In vesicular exanthema of swine, there are at least four immunologically distinct types. In vesicular stomatitis, there are two known immunologically distinct types. In African horse sickness, there are many types of virus, and in influenza of man at least two types of virus have been demonstrated. In recent years, it has been found that there are variations within a virus type. These are referred to as "variants," which may be defined as variations in the characteristics of viruses from those commonly possessed by other strains of the same type. Variants occur in the bacteriologic field and are produced artificially through a variety of conditions. In nature, they occur under unknown circumstances. A good example of these bacteriologic variants is the variant encountered in pullorum disease. In foot-and-mouth disease, it has been established that there are variants within a type. In other words, a virus may belong to the immunologic type A but still have a characteristic, from an immunogenic standpoint, which is distinct in many details from those seen in other viruses belonging to this type. Thus, an animal immunized with a regular "A" type vaccine may not be fully protected against an "A" variant. Types and variants within a type have no relationship to virulence but are directly due to the immunogenic and antigenic properties that they possess. The eastern type of equine encephalomyelitis is more virulent; that is, it has a shorter incubation period and a higher mortality rate—up to 90 per cent in horses—than the western type virus, which causes a mortality of about 25 per cent. Yet an animal immune to the eastern type resists infection with the highly virulent eastern type but is readily infected with the less virulent western type. It is the purpose of this paper to present briefly some of the results of our investigations. A more detailed report of the experimental work will appear shortly.

Experimental Reproduction of the Field Condition

The object of this test (No. 1) was to determine whether conditions similar to those seen in the field could be produced experimentally by the injection into swine of serum and virus used in the field. Virus A—one of the viruses used in the test—was a regular commercial virus that had been used in the field with several different hog cholera antiserums that were commercially prepared. Losses had occurred when virus A was used with many of these serums. Serum C1[1] was one of these and, like all commercial hog cholera antiserums, during the process of its production was heated under Bureau regulations to a temperature of 58 to 59 C. for thirty minutes. Laboratory animals were injected subcutaneously with serum C1 and all remained normal. Virus B was a regular commercial virus, and serum C2 was a regular commercial hog cholera antiserum. Virus A and serum C1 were unrelated to virus B and serum C2, in that they were prepared in different plants. The test with these viruses and serums was made at the Division laboratory at Beltsville, and 32 pigs were used. The animals in this and subsequent experiments at Beltsville were either

TABLE 1—Results of Test with Virus A, Associated with Field Break, Against Serum C1, Used in the Field, and Unrelated Serum C2

Pigs (No.)	Estimated weight (lb.)	Serum Kind	Serum Amt. (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
8	60-80	C1	30	A	0	0	5[2]	3	0
7	90-110	C2	30-36	A	0	3	1[2]	3	43
2	125-150	None	—	A	0	0	0	2[4]	0
6	80-120	C1	30-40	B	5	1	0	0	100
4	110	C2	36	B	4[5]	0	0	0	100
1	100	None	—	B	0	0	0	1	0
4[3]	40	None	—	A	4	0	0	0	100

[1]N = normal (no impairment of appetite); Sl = slight reaction; Sv = severe reaction; D = died, or killed when moribund.

[2]One pig killed on sixth day and 1 on fifteenth day for virus and spleen. [3]Killed on twenty-second day for virus and spleen. [4]One pig killed on sixth day for virus and spleen. [5]These four pigs were cholera immune.

[1]Commercially prepared serums are designated by the letter C.

from the herd of the Bureau's Animal Husbandry Division at Beltsville, were raised at the Animal Disease Station at Beltsville, or were purchased in nearby Maryland. Details of test 1 are given in table 1.

A test (No. 1A) of virus A serum C1 and virus A and serum C3 was made at Ames, Iowa, using 12 pigs. Serum C3 was produced in a third plant. Four of the 12 pigs were cholera immune, and the remainder were cholera susceptible. The pigs in this test were obtained in Missouri or nearby. Details of this test are given in table 1A.

TABLE 1A—Results of Test with Virus A, Associated with Field Break, Against Serum C1, Used in the Field, and Unrelated Serum C3

Pigs (No.)	Weight (lb.)	Serum Kind	Serum Amt. (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
3	50-60	C1	35	A	0	0	2	1	0
3	40-60	C3	35	A	3	0	0	0	100
2	45-50	None	—	A	0	0	1[2]	1	0
4[3]	40-65	None	—	A	4	0	0	0	100

[1]See first reference in table 1. [2]Killed for postmortem examination on ninth day. [3]These four pigs were cholera immune. Each was challenged with 10 cc. of virus A.

Results of test 1 definitely indicated (1) that the condition seen in the field was reproduced; (2) that the factor or factors responsible for the post-vaccination breaks in the test were associated with virus A; (3) that the cholera-immune pigs were not affected visibly by virus A; and (4) that both serums C1 and C2 had adequate potency to protect satisfactorily in minimum amounts when used simultaneously with virus B but failed to protect against virus A.

In test 1A, as in the previous test, the cholera-immune pigs were not visibly affected by the injection of virus A. The results obtained by the virus-serum treatment in test 1A might suggest that serum C1 was impotent. However, test 1 indicated that serum C1, when used simultaneously with virus B, possessed sufficient potency to protect. The results in test 1 might suggest that no hog cholera antiserum was capable of giving adequate protection against virus A, since neither serum C1 nor serum C2 gave adequate protection. Test 1A did not support this view as serum C3 gave satisfactory protection against virus A.

Since serum C3 gave satisfactory protection against virus A, whereas serums C1 and C2 gave very slight protection, it seems a logical deduction that serum C3 contained more of the antibodies that protect against virus A than did either serums C1 or serum C2. In turn, it seems a logical deduction that the hypering virus used to produce serum C3 more closely resembled virus A in its antigenic factors than did the hypering virus used to produce serum C1 or serum C2.

Inasmuch as virus A produced no ill effects when used to challenge cholera-immune pigs and since it produced typical cholera in cholera-susceptible pigs but failed to be counteracted by some hog cholera antiserums that counteracted regular viruses, it was concluded from these and other tests that virus A was a variant of regular hog cholera virus.

TEST OF SERUMS TO DETERMINE AMOUNTS REQUIRED TO PROTECT AGAINST VARIANT AND REGULAR VIRUSES

A test was made to find out if different amounts of serum C1 and serum C3 would be required to give adequate protection against virus A and the BAI strain of hog cholera virus. Two BAI strains, 276 and 286, were used in the tests described in this paper. Virus 286 was derived directly from frozen strain 276, which was the forty-fourth transfer of a virus obtained from a pig inoculated in 1943 with a virus obtained from a commercial producer of serum and virus. Its history prior to this date is not known. Since 1943, this virus has been used at the station at Ames in all experimental work carried out with virus, vaccines, and serums and has been used for the same purpose at the Animal Disease Station at Beltsville. It has been supplied to licensed producers of serum and virus in this country at various times and to investigators in Europe, Asia, and South America.

TABLE 2—Results of Test with Serums C1 and C3 to Determine Amount Required to Protect Against Virus A and BAI Virus 276

Pigs (No.)	Serum Kind	Serum Amt. (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
2	C1	5	A[2]	0	0	0	2	0
2	C1	15	A[2]	0	0	0	2	0
2	C1	45	A[2]	0	2	0	0	100
2	C3	5	A[2]	0	0	0	2	0
2	C3	15	A[2]	0	2	0	0	100
2	C3	45	A[2]	2	0	0	0	100
3	None	—	A[2]	0	0	2[3]	1	0
2	C1	5	BAI 276[4]	0	2	0	0	100
2	C1	15	BAI 276[4]	2	0	0	0	100
2	C1	45	BAI 276[4]	2	0	0	0	100
2	C3	5	BAI 276[4]	1	1	0	0	100
2	C3	15	BAI 276[4]	2	0	0	0	100
2	C3	45	BAI 276[4]	2	0	0	0	100
3	None	—	BAI 276[4]	0	0	2[3]	1	0

[1]See first reference in table 1. [2]Both pigs killed for virus on seventh day. [3]A regular commercial virus associated with field break. [4]Phenolized virus stored in freezer at —40 F. for 192 days. Dilutions of 1 : 1,000,000 produced cholera at the time of preparation.

Thirty cholera-susceptible pigs obtained in Missouri or nearby were used in this test. The kinds of viruses and serums used for the different groups of pigs and the results obtained are given in table 2.

The results indicate that 5 cc. of serums C1 and C3 would protect against BAI virus 276, whereas 45 cc. of serum C1 and 15 cc. of C3 were required to give the same degree of protection against virus A. Titrations of these two viruses were made. Before the titrations, virus A had been

held in a refrigerator at 40 F. for thirty-four days and BAI 276, a phenolized virus, was held in a deep freezer at —40 F. for 192 days.

At the time the latter was prepared, it had produced cholera in a dilution of 1 : 5,000,000. Two pigs were each injected with the following dilutions of each virus: 1 cc. undiluted; 1 : 8,000; 1 : 100,000; 1 : 1,000,000; and 1 : 5,000,000. Both pigs injected with 1 cc. of virus A sickened and died. One of the 2 pigs injected with 1 : 8,000 dilution of virus A remained normal and the other was sluggish and had a temperature of 105 F. on the seventh and eighth days, but recovered. This pig and the other survivors were found to be susceptible to a later challenge dose of hog cholera virus. All the pigs injected with BAI virus 276, except the 2 injected with the dilution of 1 : 5,000,000, died of cholera. The 2 injected with this dilution proved to be susceptible when challenged later. Results of the titration of the two viruses indicated that virus A contained from 1 to less than 8,000 m.l.d.'s per cubic centimeter, whereas BAI 276 contained from 1,000,000 to less than 5,000,000 m.l.d.'s per cubic centimeter. In other words, the lethality of virus A was more than 100 times less than that of BAI virus 276.

In spite of the lesser lethality of virus A, more serum was required to protect against it than against the more lethal BAI virus 276. A careful review of the records of production and testing of both serum and virus under study showed no deviation from that regularly followed by Bureau regulations. This fact, together with the information obtained from the field survey and from the tests, lead to the conclusion that virus A was, or contained, a variant form of hog cholera virus, and United States Department of Agriculture release 2396-49 dated Nov. 8, 1949, was made accordingly.

SELECTION OF A STANDARD SERUM TO DETECT VIRUS WITH VARIANT CHARACTERISTICS

As the supply of serums C1 and C2 was limited, the need for a large amount of serum having similar protective properties to be used to detect variant virus became apparent. After exhaustive tests, a commercial serum was selected for use and identified as BAI experimental serum 1.

Table 3 gives the results of the original test of this serum, which in many succeeding tests has been found satisfactory for the detection of variant characteristics in a virus. Eleven cholera-susceptible pigs, the offspring of cholera-susceptible sows raised at the Animal Disease Station, were used. Their approximate weights varied from 50 to 80 lb. The table shows that 2 pigs receiving 15 cc. of the serum and 2 pigs receiving 28 cc. died after exposure to the variant virus, whereas 3 pigs receiving 15 cc. and 2 pigs receiving 28 cc. of the same serum were fully protected when exposed to BAI virus 276.

TABLE 3—Test of BAI Experimental Serum 1 Against Variant Virus 8246

Pigs (No.)	Dose of serum (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
2	15	Var. 8246[2]	0	0	0	2[2]	0
2	28	Var. 8246[3]	0	0	0	2	0
1	None	Var. 8246[3]	0	0	0	1	0
3	15	BAI 276[4]	3	0	0	0	100
2	28	BAI 276[4]	2	0	0	0	100
1	None	BAI 276[4]	0	0	0	1	0

[1]See first reference in table 1. [2]One of these pigs died on the second day following treatment. The cause of death was not determined. [3]Seventh passage of variant virus A with serum. It was unphenolized and held in a freezer at —70 C. for twenty-two days. No titration of this virus was made. [4]Phenolized virus that had been stored in the deep freezer at —40 F., or below, for 297 days. Its m.l.d. was 1/1,000,000 cc. 226 and 331 days after preparation.

TESTING OF DOSES OF BAI EXPERIMENTAL SERUM 1 AGAINST VARIANT AND REGULAR VIRUSES

In reviewing the data obtained in the field survey of the vaccination trouble that occurred in 1949, it was noted that no trouble was reported by one veterinarian who used large doses of one of the serums and one of the viruses, which when used together in some other herds by another veterinarian were consistently followed by losses. He used approximately a 50 per cent increase over the minimum dose. Results in the laboratory had also indicated that a 50 per cent increase of the minimum dose of serum would decrease the losses, even when used with a virus that had been used in herds were trouble occurred. In order to get more information on this point, a series of experiments was carried out.

One of the tests in this series was carried out to determine the effects of different doses of BAI experimental serum 1 against variant virus as compared with the effects of the same doses of the serum against regular virus. The pigs, ob-

TABLE 4—Test of Different Doses of BAI Experimental Serum 1 Against the Eighth Passage of Variant Virus with Serum and Against Regular virus

Pigs (No.)	Dose of serum (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
9	5	Var. 1B[2]	0	0	0	9	0
8[4]	15	Var. 1B[2]	0	1	1	6	12½
9	20	Var. 1B[2]	1	0	2	6	11
9	25	Var. 1B[2]	2	3	3	1	55½
9	30	Var. 1B[2]	2	4	1	2	67
9	45	Var. 1B[2]	6	3	0	0	100
9	5	BAI 286[3]	1	6	2	0	78
9	15	BAI 286[3]	3	6	0	0	100
6	20	BAI 286[3]	3	3	0	0	100
6	25	BAI 286[3]	5	1	0	0	100
3	0	Var. 1B	0	0	0	3	0
3	0	BAI 286	0	0	0	3	0

[1]See first reference in table 1. [2]Unphenolized variant virus that had been stored in deep freezer at —40 F. or below for two months. Its m.l.d. was 1/10,000 cc. about three months after preparation. [3]Unphenolized virus that had been stored in deep freezer at —40 F. for 235 days. Its m.l.d. was 1/5,000,000 cc. at the time of, and 15 days after, preparation. [4]Ninth pig died on second day with intense gastroenteritis.

tained in Missouri or nearby, weighed 35 to 60 lb. Seventy-four of the 84 treated with serum and virus weighed 50 lb. or less. The pigs, from three lots, were equally distributed in the different groups that received different doses of serums. The test was conducted at the Bureau's station at Ames, Iowa.

The results in this test (table 4) indicated that progressively larger doses of serum, when used with variant virus, brought about increases in the percentage of animals that were protected. When approximately a 50 per cent increase in the minimum dose (45 cc.) was used, all pigs receiving this dose and variant virus were adequately protected, only a few having a very slight reaction. All pigs that received 15 cc. of serum or more were protected against BAI virus, as were 7 of 9 that received only 5 cc.

DIFFERENT TESTS OF THE SAME SERUM AND VIRUSES

Four tests of the same variant (virus H) and BAI virus 286 were made at different places and with pigs of different weights. Serum used was BAI experimental serum 1. Virus H was a commercial virus that had been used in numerous herds where postvaccination reactions and losses had occurred. It was stored in a freezer at —40 F., or below, about thirty days before its expiration date. The doses of serum and virus used, the number of pigs and their weights, and the results of the four tests are given in table 5.

In the first test, conducted at the Animal Disease Station at Beltsville, pigs receiving variant virus H and 5, 15, and 30 cc. of serum had severe reactions or died, but the 2 receiving 45 cc. were adequately protected. Two pigs receiving 15 cc. of serum were adequately protected against BAI virus.

In the second test, conducted at Ames, Iowa, partial protection was obtained against virus H with 15 cc. of the serum, since 3 of 4 pigs were adequately protected by this amount. All pigs receiving larger doses were protected.

In the third test, which was conducted at the Ames station at a later date, the results were more comparable with those from the test at Beltsville (first test), since all the pigs that received 15 cc. of the serum and virus H and 2 of the 4 pigs receiving 30 cc. died.

In the fourth test, conducted at a third place, 15 pigs that received virus H and 15 cc. of serum died, and 11 of 15 that received 30 cc. of serum died or had severe reactions. Fifteen pigs treated with 15 cc. of serum, as well as 15 pigs treated with 30-cc. doses, were completely protected against BAI virus.

Brought out by these four tests is the fact that at times different results may be obtained in testing for variants, and this may partly account for some of the observations in the field that losses may occur in one group of pigs, while in another the loss may not occur or be negligible. The weights and ages of the pigs in relation to their immunity to cholera are important factors to consider in this connection. Evidence had been obtained both in the field and in the laboratory that increased doses of serum will eliminate or reduce the losses that otherwise may occur from the use of variant virus. It has been shown that if an animal is immune to hog cholera by injection of regular virus and serum, it is resistant to the action of a variant virus. It is believed that in pigs suckling immune dams, immunity may play a part in their increased resistance to variant virus when vaccinated. Since such pigs are known to possess considerable resistance to hog cholera virus, it is logical to assume that when vaccinated with a variant they will show increased resistance that may persist for a short time after weaning. The results of the four tests given in table 5 indicate that as the weight of the pigs increased their probable immunity derived from the sow decreased and their susceptibility to the variant increased.

TABLE 5—Results of Four Tests of the Same Variant and BAI Hog Cholera Viruses Made at Different Places with Pigs of Different Weights

Amt. of BAI exp. serum 1 (cc.)	Test 1 losses[1]	Test 1 wt. (lb.)	Test 2 losses[1]	Test 2 wt. (lb.)	Test 3 repeat[2] losses[1]	Test 3 repeat[2] wt. (lb.)	Test 4 losses[1]	Test 4 wt. (lb.)
			Variant Virus H[4]					
5	2/2[3]	58	2/2	32	—	—	—	—
15	3/3	81	1/4	41	4/4	67	15/15	82
30	2/2	74	0/2	46	2/4	76	11/15	82
45	0/2	57	0/2	51	0/4	97	—	—
			BAI Virus 286[5]					
5	—	—	0/2	30	—	—	—	—
15	0/2	62	0/2	31	0/2	80	0/15	82
30	—	—	0/2	43	0/2	98	0/15	82
45	—	—	0/2	51	—	—	—	—

[1]Died or had severe reactions. [2]This was a repetition of test 2, both tests being made at Ames. Heavier pigs were used in the second test. [3]Numerator indicates number of losses; denominator indicates number of pigs tested. [4]A commercial virus held in refrigerator at 40 F. for about two months after preparation and then in freezer at —40 F., or below, from one to three months. Its m.l.d. was 1/1,000 cc. after about ten weeks' storage in freezer at —40 F. or below. [5]Unphenolized virus that had been stored in freezer at —40 F. or below for 336 days. Its m.l.d. was 1/1,000,000 cc. 226 and 331 days after preparation.

Three factors, therefore, are brought into prominence: (1) whether the pigs are from immune sows, (2) the age of the pigs, and (3) the increased dose of serum. Evidence similar to that shown in table 5 has been found in other tests. The practical conclusion from these tests and observations is that in order to avoid or reduce losses from variant viruses, pigs should be vaccinated well before weaning time and the dose of serum should be increased 50 per cent over the minimum dose on labels on serum prior to

[1]Federal regulations which became effective April 15, 1951, have been amended to require labels on hog cholera antiserum to show an increase of 25 per cent over the minimum dosage previously shown. In keeping with the recommendations in the text, an additional 25 per cent would be needed.

April 15, 1951.[3] If pigs are vaccinated after weaning, the minimum dose should be correspondingly increased.

SERIAL PASSAGE OF VARIANT VIRUS

Numerous tests have been made on the variant virus with respect to its continued passage from animal to animal. Serial passage was started in 1949 by direct inoculations of susceptible pigs. At the same time, serial passages were made in susceptible pigs using the variant virus in combination with serum.

Table 6 gives the results of a test comparing the seventh serial passage of virus A with and without serum. They indicate that, in the passage with serum, virus A still retains its variant characteristics; whereas in the direct passage of virus A, these characteristics were not demonstrated.

TABLE 6—Loss of Variant Characteristics by Direct Virus Passage Without Serum in Swine

Pigs (No.)	Serum kind	Serum amt. (cc.)	Virus (used in 2-cc. amts.)	No. of pigs giving various reactions[1] N	Sl	Sv	D	Pigs adequately protected (%)
2	C2	15	Seventh	2	0	0	0	100
2	C2	28	direct	2	0	0	0	100
2	None		passage of virus A[3]	0	0	0	2	0
3	C2	15	Seventh	0	1[2]	0	2	0
2	C2	28	passage	0	0	2	0	0
1	None		virus A with serum[3]	0	0	0	1	0

[1]See first reference in table 1. [2]This pig had only a febrile reaction when it was bled out for virus on the seventh day. [3]No titration of either virus was made.

DISCUSSION

Results of our studies indicating that a variant form of hog cholera virus exists are in accord with scientific knowledge. In the field of virology, virus types which are immunologically distinct have been found, and variants within these types have also been demonstrated through laboratory procedures. How these virus types and variants within types develop is not definitely known. Some persons hold that a particular virus type is the parent type and that other types are derived from it. Similarly, variants may arise within a type.

Hog cholera virus is propagated by the inoculation of swine with a known hog cholera virus. Since many swine are inoculated in the commercial preparation of hog cholera virus, the reactions that occur in certain swine may have such an influence on the virus that variation may result. That the present virus under discussion is a variant and not a new type, at least in the studies made, is indicated by the fact that swine successfully vaccinated with serum and virus are immune to the effects of the variant virus. On the other hand, susceptible swine treated with variant virus and certain serums will be adversely affected, whereas similar animals treated with regular virus and the same serum will remain well.

A number of commercial serums failed to afford adequate protection against variant virus A. However, a commercial serum, C3, gave adequate protection in laboratory tests against this virus. It therefore appears that serums may be produced commercially at times which, when used in minimum doses, will give adequate protection against the variant virus. The hyperimmune virus used in the manufacture of such a serum would be the determining factor.

The condition or the status of the pigs appears to be a factor in the development of a variant virus. Even the ability of pigs to withstand exposure to a variant virus and serum appears to be variable, since in a group vaccinated with variant virus and serum only a part may be adversely affected. This is seen not only in the laboratory but also in the field where variant virus, when used in some herds, produced heavy losses, whereas the same material used in other herds failed to produce significant losses or perhaps none at all. All these observations and factors point out the difficulty of the solution of the problem of preventing losses.

Intensive study has been given to this problem, not only by the Bureau but also by the commercial biologic houses. At a number of meetings of representatives from the serum industry and the Bureau, this problem has been discussed very thoroughly. Tests for the detection of variant viruses, using BAI experimental serum 1, have been made at all the serum-producing establishments, and in no instance was any evidence of variant viruses found. Every effort is being made to find improved means by which the development of a variant virus can be prevented and its presence detected. Newer techniques are being tried in virus production with the object of minimizing the possibility of variant virus development.

This report covers only a résumé of a part of our extensive studies on this problem. On the basis of these studies, it can

be concluded that some of the losses in the past two years have been caused by a variation in the virus. However, this does not mean that all of the losses occasioned in the past two years have been due to a variant virus. It is well known that severe reactions may be encountered in the injudicious use of serum and regular virus in herds in which other conditions are present that make such a procedure a hazardous one.

With regard to the possible reappearance of variation in hog cholera virus in the coming year or in future years, under present conditions it is difficult to make a statement. When one considers the large amount of serum and virus used successfully in this country, the troubles that might be ascribed to the variant virus are small, and the chances of a practitioner, for example, receiving such a virus are extremely small. Nevertheless, one should be on guard against this possibility. The information accrued from our laboratory studies and observations in the field indicate a general method of procedure regarding vaccination which we believe desirable to discuss at this point.

First, our swine herds should be protected against the ravages of hog cholera, and vaccination should proceed in a normal manner with serum and virus and under certain conditions with other types of products. Vaccination is a technical professional procedure. It involves not only the actual administration of a product but also a knowledge of the conditions under which it is to be used and a knowledge of the product itself. The condition of the herd to be vaccinated is of prime importance. This point has always been stressed. It is not necessary to go into details regarding this point, since veterinarians are cognizant of the dangers when serum and virus are used in herds that are not in satisfactory condition to receive such treatment. All are familiar with the so-called "problem" herds in which trouble is often encountered. Certainly, no herd should be vaccinated unless the animals are in good condition, free of intercurrent troubles, and otherwise healthy.

The second point to consider is the age of the pig. Since it has been found that suckling pigs have fewer reactions from variant virus than pigs that have been weaned, suckling age is the best time to vaccinate. It has also been shown that increasing the doses of serum is an effective means of reducing or avoiding losses from variant virus. It is, therefore, recommended that in addition to vaccinating suckling pigs, the dose of serum be increased 50 per cent over the minimum dose on the label.[3] There is no absolute assurance that this will be 100 per cent effective in all cases, but certainly from the evidence at hand, it is believed that this procedure should markedly reduce or eliminate troubles that might be due to variant virus. Losses, however, may be occasioned by other than variant virus if the animals in question are not in proper condition to receive the treatment.

Finally, much more still remains to be learned regarding this whole problem, since many unanswered questions must await further research.

SUMMARY

Losses in swine during the summers of 1949 and 1950, following vaccination with hog cholera virus and serum, were investigated both in the field and in the laboratory. Laboratory investigations were conducted at the Pathological Division's Animal Disease Station at Beltsville, Md., and at its Hog Cholera Research Station at Ames, Iowa, and more than 2,000 experimental swine were used. The investigations revealed that some of the viruses used in the field possessed unusual characteristics; these viruses have been designated variants. The pigs already immunized against hog cholera by serum and virus were resistant to inoculation with the variant virus. However, a number of cholera-susceptible swine, when injected with variant virus and serum, either became sick and recovered or died, whereas similar pigs treated with regular virus and the same serum remained well. Weaned pigs when vaccinated were more susceptible to the effects of variant virus than suckling pigs. By increasing the dose of serum, the effect of the variant virus could be reduced or eliminated. It is recommended that in hog cholera vaccination careful attention be given to the condition of the herd to be vaccinated, and that the dose of the serum be increased 50 per cent over the minimum dose.[4]

[3] See footnote 2.
[4] See footnote 2.

Animal Management After Atomic Bombings (Review of a Pamphlet)

Because the Massachusetts Society for the Prevention of Cruelty to Animals has received so many requests for advice concerning the effects of atomic radiation on animals and what to do in such an emergency, Dr. David L. Coffin, of the Angell Memorial Animal Hospital staff, obtained factual information on the subject. He contacted Dr. Shields Warren, director of the Division of Biology and Medicine of the Atomic Energy Commission, and leading authorities of the A.E.C. and the Veterinary Corps. The information in this leaflet is a result of his studies.

It is designed to serve as a guide to veterinarians, livestock handlers, and humane society agents in the handling of animal problems in the event of a local atomic attack. There is a need for such information because of the enormous number of dogs, cats, and other pets in the large urban centers, and because the sentiment felt for such pets has a bearing on civilian morale. Furthermore, large numbers of animals thrown upon their resources for survival because of extensive human casualties and the destruction of property will complicate civil defense problems unless properly attended.

So far as is known, human beings and the various pet and farm animals are subject to the same kinds and degrees of injuries from an atomic discharge. The effects are: (1) blast or concussion, (2) flash burn, (3) radiation injury. Secondary to the bomb burst are injuries from falling beams and debris, flying glass fragments, and thermal exposure from ordinary building fires.

Aside from those within the zone of complete destruction in the center of the blast, small pet animals will probably be less vulnerable than human beings, because they are small and can take cover quickly. Their dense coats tend to protect them from all but the most intense flash burns. Many pets whose masters are casualties or otherwise displaced will become strays in the area. These will require attention for humane and public health reasons.

There is no danger to human beings from animals exposed to radiation from atomic energy.

All severely injured animals should be humanely destroyed as quickly as possible. If veterinary facilities remain in operation, animals will be brought to veterinarians for treatment. The veterinarian must be guided by his scientific knowledge and humanity to decide which animals should be disposed of and which should be treated. Animals showing obvious signs of radiation injury, such as nausea and vomiting, should receive euthanisia, as should the badly lacerated or burned animals. Most of the treatable injuries will be cuts and lacerations from flying glass and fractures or contusions from falling debris. Procedures now in use for such injuries will continue to be appropriate. Severe radiation injury, which requires sustained treatment consisting of blood and plasma and antibiotics to prevent secondary infection, will probably be impossible because there will neither be personnel nor critical supplies available for use on animals.

The procedures suitable for pet animals are equally applicable to farm or economic animals.

Unless there is extremely heavy contamination of forage, such as would occur in close proximity to an under-water burst, there is little danger that animals grazing on such material would become radioactive.

In cities having zoos, plans should be formulated to prevent the escape of dangerous animals. This also applies to stockyards.

In general, the rules applying to the use of foodstuffs for human consumption would apply to animal foods. Food within metal cans, or other tight packages, or inside intact buildings would be considered safe for animal food. If food supplies were short, even foods contaminated by radioactive materials might be fed to pets or stock for a short period with small risk.

It should be stressed that practical measures calling for the least strain on existing facilities should be employed in animal management in such a crisis. Plans should be formulated now that could be put in operation when required, so that the problem could be taken care of smoothly and efficiently.

Management of Animals in an Atomic Emergency. By Eric H. Hansen and David L. Coffin, V.M.D. 4 pages. Massachusetts S.P.C.A., Boston 15, Mass. Price, 5 cents.

Improved Pullorum Test for Turkeys.—Use of ethylene dichloride to remove fat from the blood serum of laying turkey hens has been announced by University of Illinois veterinarians as a new aid to pullorum disease control in laying flocks. Fat, which builds up in the blood as soon as turkeys start to lay, causes the serum to become cloudy and was a detriment to pullorum testing prior to the use of this chemical.

Hemagglutination-Inhibition Tests

Extensive experiments by Michelson and Bachrach (*Nord. Vet. med.*, *2*, 1950: 825-832) demonstrated no significant differences in the hemagglutination-inhibition activities of normal, immune, and hyperimmune bovine serums. Also, normal and immune guinea pig serums are equally inhibitory, but to a lesser degree. The authors conclude that it is as yet impossible to designate the hemagglutination-inhibition test which will differentiate between foot-and-mouth disease virus strains O, A, and C, on the basis of immune serums. They can not be differentiated from each other nor from normal serum.

Veterinary Medical Education—Its Evolution and Present Status

WILLIAM A. HAGAN, D.V.M.

Ithaca, New York

THIS SEEMS to be an appropriate occasion on which to review the progress made in veterinary education and practice in this country, since we are dedicating today new facilities that are expected to contribute to additional progress. It is the function of schools to collect, sort, interpret, and dispense to new generations the wisdom and knowledge collected by those that preceded them. The progress of a particular profession can be measured fairly accurately by scrutinizing its schools. If they are well-supported, manned by competent scholars and teachers, each generation of students is trained to enter the profession with a better basic education than its predecessors. If the schools are poor, new generations labor under many of the same delusions and make many of the same mistakes that were made by those who lived before them.

In providing these facilities and in supporting a distinguished and progressive faculty in veterinary medicine, the State of Minnesota is to be congratulated. As one of our leading livestock states, it is only right that it should contribute as it is now doing, to the education of a group of men who will serve to protect its animal industry from the hazards of disease. For many years, Minnesota has maintained a strong veterinary research and service program, and it has had a progressive livestock sanitary board. These are excellent, so far as they go, but more veterinary practitioners are needed. Through the agency of this new school, it is providing training to a group of young men who will become practitioners and who will labor in other capacities as animal disease specialists. Undoubtedly, most of these men will serve the State of Minnesota, but some will work elsewhere. It is neither feasible nor necessary that every state have its own veterinary and other specialized schools. There is, and should be, reciprocity between states on such matters. There are few formal agreements on these exchanges of students. The success of the matter lies in the general understanding that it pays all states to extend their educational facilities to the residents of others, so far as they can, in order that their own residents may, because of reciprocity, have a wider educational opportunity than they themselves can afford to supply. In effect, it is a pooling of the educational facilities of the entire country.

Education in the medical fields is far more expensive than in most others. The high cost of maintaining such schools probably is the principal factor that has deterred many states from establishing them. For many years, there have not been enough schools to provide places for all who wished to study and qualify for the medical professions, or to provide enough graduates to supply the country's needs. An interesting experiment recently has been inaugurated by 13 southeastern states, in which they have combined to share the costs of medical, dental, and veterinary education for residents of that region. Its operation will be watched and, if it succeeds, it is likely to be the pattern for more agreements between other groups of states.

The reciprocity system has partly broken down in recent years, so far as veterinary medicine is concerned, and it has worked poorly with respect to human medicine for many years. Since the veterinary schools are all state supported, or subsidized, they are expected to give first consideration to applicants from their own states and to serve residents of other states only if they have places for them. In recent years, the pressure for admission on all schools has been so great that they were able to accommodate very few nonresidents. This has made it impossible for many good prospective students to study veterinary medicine because they happened to live in states which did not maintain veterinary schools. The faculties of the veterinary schools have not been happy about this situation,

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Presented at the dedication of the veterinary hospital building, University of Minnesota, St. Paul, Oct. 25, 1950.

Dr. Hagan is dean of the New York State Veterinary College, Cornell University, Ithaca.

for it has been necessary for them to teach students from their own states who were inferior to ones that they might have had from other states had it been possible to accept them. Nothing could be done about it, however.

The pressure from applicants that could not obtain an education in veterinary medicine, rather than the need for more men in the profession, was responsible for the establishment of a number of new veterinary schools, this one among them, in recent years. It has been obvious for ten years that we needed additional schools, but this need was not dramatized and brought to the attention of legislators in an effective way until the young veterans came along.

The development of veterinary medicine throughout the ages has closely followed that of human medicine. Prehistoric man, as soon as he learned to put a splint on a broken bone of one of his fellows, probably soon began doing the same thing for his dog, or perhaps he learned on his dog how to do it for for his human companions. From that time to this, any new remedies in human medicine have been quickly applied in veterinary medicine, and vice versa. The only difference in the application of the principles of medicine to man and to animals lies in its economic aspects. Except as pets, animal values are determined by practical considerations and not by sentiment, and the cost of treatment must always be gauged with respect to the value of the animal. A surgeon often is able to collect a $100 fee for removing the appendix from a $10 man. Veterinarians must have a better sense of comparative values.

From ancient times until the middle of the nineteenth century, little progress was made in any field of medical science. Surgery was limited to trivial, external conditions, since all wounds became contaminated with pyogenic bacteria and penetration of the body cavities usually resulted in death. Medicinal agents were numerous, but we now know that very few of them had any curative value. The weird and awesome mixtures of the middle ages were followed by the herbs and mineral compounds of more recent times, some of which had value in the alleviation of pain and suffering, but few had much influence in obtaining final recovery of the patient from his ailment. With very few exceptions, the armamentarium of medicine had few specific cures of disease prior to the time the sulfonamide drugs and the antibiotics were introduced. All practitioners of medicine, whether human or veterinary, should do penance regularly at the feet of old Mother Nature for it is she, and not they, who deserves the major credit in most cases where any credit is due.

Progress in surgery had to await the development of the science of microbiology and a knowledge of how to prevent and treat wound infections. Also, it could not go far until anesthetics had been developed. Medicine was placed on a firm, scientific basis by the development of the science of pathology which delved into the basic processes of disease. Therapeutics began to lose its empiricism and qualified as a science only after pharmacologic methods had been developed by which we could know the specific effects of individual drugs on the tissues and organs of the body.

The earliest physicians and veterinarians were self-taught, or they obtained what they knew from older practitioners. A century ago, most practitioners in both fields were of this type. Young men who wished to become doctors were bound out by their fathers as apprentices to practitioners. For a year they would clean the office, tend the fires in winter, feed and care for the horses and, between times, read some of the doctor's books. Later, they would learn how to compound the remedies and, finally, they would accompany their preceptors on calls. When the apprenticeships had expired, they were free to hang out their own shingles. There were no such bothersome things as state licenses to secure. If they thought they could get away with it, they did not even undergo the apprenticeship before assuming the title of doctor and offering their services to the public.

Such practitioners continued until licensing laws were enacted. These laws generally required better preparation than had been the rule previously, but they could not disqualify the men who had been in practice a reasonable time before the laws were enacted, under the prohibition contained in our national constitution against the passing of *ex post facto* laws. I doubt that there are many such practitioners today in the field of human medicine in this country, but there were considerable

numbers only a few years ago. Veterinary medical practice is not so clear of such practitioners since licensing laws in this field generally were more recently enacted, and some of them are very lenient. In at least two states, it is still possible for nongraduates to obtain licenses to practice veterinary medicine. In one state at least, the state association of nongraduate veterinarians has a greater membership than that of the graduate veterinarians. In the great majority of states, however, legal, nongraduate veterinarians do not exist today, or their numbers are very few and rapidly diminishing.

HISTORY OF VETERINARY SCHOOLS

The earliest veterinary schools were founded in Europe less than 300 years ago. These were governmentally financed and were set up independently of universities. The French, Austrian, Belgian, Dutch, and Scandinavian schools have always been of this type. The Swiss and German schools, on the other hand, were established as parts of universities in most cases, although they received governmental support. In the British Isles, the schools, until quite recently, were operated as private institutions apart from universities. All are now affiliated with universities and are supported partly with private and partly with governmental funds.

The first veterinary school in America was founded in New York in 1852. Its existence was brief, but others were set up in quick succession afterward. Before 1900, at least 27 schools operated at one time or another in the United States, and there were three in Canada. Some operated only a year or two but a few had much longer lives. All but five of these schools are now out of existence. Most of them closed before or shortly after World War I.

The majority of these schools were of the proprietary type; that is, they were chartered as business enterprises and depended wholly upon student fees for their revenues. They were modeled on the English type, since most of the founders were graduates of schools in the British Isles. The earlier ones were primitive. Located in old livery stables or similar structures in the larger cities, they consisted of little more than a room for lecturing and another for dissecting horse carcasses. The course consisted of two years of five months each, and in some instances, it appears that the work of the second year was only a repetition of that of the first. It is said that attendance during the second year was not always required, the diploma being granted if the tuition had been paid. Outside of lecture and dissecting hours, students accompanied their professors on the calls in their private practices.

About the turn of the century, most of the schools increased the length of their courses to three years. An elementary, or grade school, certificate was supposed to be required for admission, but some of the catalogues had statements about the acceptance of maturity and practical experience in lieu of the formal scholastic requirements. Probably, anyone with the tuition fees in hand could have found a school willing to accept him at that time irrespective of all other qualifications.

Before the end of the last century, another development in veterinary education began. This was the entrance into the field of the endowed or tax-supported colleges which will be referred to hereafter as the subsidized schools. A two-year course in veterinary medicine was instituted by Iowa State College in 1879. Harvard set up a curriculum in veterinary medicine in 1882, the University of Pennsylvania in 1884, Ohio State University in 1885, Cornell in 1896, and Washington State College in 1899. The school at Harvard was abandoned in 1901, but the other five have functioned continuously until the present time. All of these, except that of the University of Pennsylvania, are affiliated with land-grant colleges.

During this same period, the private schools also flourished. No less than 14 schools of this character came into existence in the United States between 1890 and 1900. By 1920, all but three of these had gone out of existence, and these three lasted only a few years longer.

After the turn of the century, seven more subsidized schools were formed, all located in land-grant colleges and supported by states. Those of Georgia and Arkansas closed after a few years but the other five, supported by Alabama, Colorado, Kansas, Michigan, and Texas, have functioned continuously.

The last of the private schools ceased operating in 1927, leaving the task of educating men for the profession in the hands of 11 subsidized schools. When the Georgia school closed in 1933, the number was reduced to ten. These ten supplied all the graduates, except some from the Ontario Veterinary College in Canada and a very few from abroad, that entered the profession in this country between 1933 and 1949.

The old private schools were not abandoned without a struggle. They were forced out of existence by advancing educational standards established by state and national governments and by the profession itself. Another factor in the situation was the rapid decline of the numbers of horses in the cities where all of these schools were located, a circumstance which sharply reduced the incomes from private practice.

These schools served a good purpose. They supplied veterinary practitioners at a time when they were greatly needed and when no other source of supply was at hand. Their standards were poor in the beginning, but there was improvement as time passed and, toward the end, several of them had faculties and facilities as good as most of the

subsidized schools. These schools graduated far more veterinarians than the subsidized schools did during the time they were in existence. Even today, it is doubtful whether any existing school can claim as many graduates as were on the alumni roll of the Chicago Veterinary College when it closed in 1920 (2,387), or of Kansas City Veterinary College when it closed in 1918 (1,789). Many of the present-day leaders of the profession came from such schools, and the general performance of their graduates has been very good. But such schools had reached the end of their ropes. The advancements of science had been so great that they could not afford to give, for fees that students could be expected to pay, the necessary foundational training demanded by modern educational standards.

Between 1890 and 1920, the private schools graduated about 10,000 veterinarians, the greater number after 1900. After they had closed, the annual output of veterinary graduates in this country fell to a very low level. There was pessimism within the ranks and many looked upon veterinary medicine as a dying profession. Veterinarians had formerly been "horse doctors" and the horse was rapidly making way for motorization. Adjustments to changed conditions had not yet been made. Although there were only half as many veterinary schools in 1920 as there had been ten years before, these struggled in vain to find enough students to fill their classes. At the lowest point, there were fewer than 1,000 students registered in all of the veterinary schools. During this time, the numbers in the profession were actually decreasing since the additions were not keeping pace with losses due to deaths and retirements. The low registration during this period caused educational improvements to be postponed, for budgets could not be increased and admission requirements raised under the existing conditions. It is a wonder that more schools were not abandoned during this period.

READJUSTMENT IN THE PROFESSION

The profession readjusted to changed conditions more easily and more quickly than many thought possible. A tremendous increase in interest in pet animals during this period brought about the development of many small animal hospitals. Many urban practitioners who formerly had depended upon the horse now came to depend upon pet animals for patients. The great increase in the unit value of food-producing animals enabled many country practitioners to make up from cattle and swine the practice they lost as a consequence of the decrease in numbers of horses. Increased interest in public health matters caused many positions for veterinarians to be created in city, county, and state health departments. The Veterinary Corps of the Army came into existence in World War I and provided commissioned status to a considerable group of veterinarians. Between the two great wars, mechanization gradually eliminated the horse from our defense machine but, as this was occurring, the Veterinary Corps was given responsibilities in assuring the wholesomeness and safety of the Army's food supply, a task which required more veterinarians than previously had been needed to serve its horses. The Federal-State Tuberculosis Eradication Plan provided employment for many veterinarians on a full-time basis and served to supplement the incomes of thousands of private practitioners at a time when it was most welcome. Quite recently, the Veterinary Division of the U. S. Public Health Service has provided another outlet for veterinary graduates, and a growing number is being added to the staffs of medical schools and medical research institutes.

As can be seen, the field of activities of veterinarians has expanded tremendously during the last thirty years. In order to prepare men for this wider range of activities, the schools have had to make great changes in their curriculums. The three-year course superseded the two-year course about the beginning of the century and it, in turn, was followed by a four-year course, instituted in all schools before the end of the first world war. Admission requirements, which were exceedingly low in the beginning, were gradually stiffened. By 1900, most of the schools required a grade school certificate, and a few required two years of high school. Early in the century, all of the subsidized, and some of the private, schools required matriculants to be high school graduates. Between 1931 and 1936, all of the colleges raised their entrance requirements to include one year of general college preparatory work—the preveterinary year—and, by 1949, all schools were requiring two years of preveterinary training.

The increase in preveterinary collegiate training made it possible for faculties to strip the veterinary curriculum of nearly all but strictly professional subjects, thus making room for new subjects such as virology, pharmacology, roentgenology, food hygiene, genetics, and nutrition, which previously were wholly lacking or given

inadequate treatment. The basic work in chemistry, physics, zoölogy, and English which previously had been taken in the veterinary curriculum were now relegated to the preveterinary courses. The two years in the preveterinary course now leaves enough time for the student to obtain credits in the subjects indicated, which are basic to further work in the veterinary curriculum, and also for him to get a few of the cultural subjects which we believe to be helpful in making him a good citizen and in enabling him to take his place among educated people. Professional curriculums, highly specialized as they are, are poor substitutes for a general education. Professional people, from the time they begin their education to the time they retire from active work, have little time for reading and self-education outside their specialties. This fact makes it important that they obtain as good a general education as they can before their professional training is begun. It is no less important in veterinary medicine than it is in medicine, dentistry, law, architecture, engineering, and all the other professions.

There are some in the profession who feel that we have gone too far in requiring six years of college training for the degree in veterinary medicine. They say that we have set up a training hurdle which may be too formidable for many farm-trained boys, our most desirable candidates. I do not believe that this is true. At least, I know of no boys who thought they could manage four, but not six, years of college work. I wish the educational job could be satisfactorily done in less time, but I do not think it can be unless we are willing to turn out veterinary technicians, persons trained to do much of the routine work of practice but lacking the foundational training which prepares them to cope with new problems. Such men would have little chance of competing successfully with county agents, nutritionists, feed salesmen, and animal husbandry specialists of other types, and even with many of our better farmers. The educational level of this country is high and is steadily rising. Today, we have nearly as many college-trained people in our population as we had high school graduates thirty or forty years ago. The profession can not afford to underestimate the intelligence and knowledge of many of our livestock breeders. If veterinarians are to deliver what is expected of them, if they are to keep the respect of their clients, they need a good general education as well as a sound professional training. The majority of veterinary students are still farm-raised boys. Many of them have a difficult struggle to finance their educations, but it is still possible for most determined healthy boys who have the necessary intellectual equipment to obtain an education in veterinary medicine.

Since 1945, seven new schools of veterinary medicine have been established in the United States, making a total of 17. The new schools and the dates when classes were first accepted are: Tuskegee Institute, 1945; University of Georgia, 1946; University of Missouri, 1946; Oklahoma A. & M. College, 1947; University of Minnesota, 1947; University of Illinois, 1948; University of California, 1948.

The entrance requirements of these schools and the length of courses are the same as in the older schools. Classes have already been graduated from the first three named; there will be graduating classes next June from the fourth and fifth; and the sixth and seventh will graduate their first classes in 1952.

At the present, there are nearly 4,000 students studying veterinary medicine in the United States. Ten years ago, there were only about half this number and twenty years ago, only about one fourth. The impact of these 4,000 students upon a profession which numbers only about 15,000 will shortly become evident. The graduates will be quickly and easily absorbed for a few years, but it is obvious that, if this rate is maintained, the number of veterinarians in the country is destined to increase rapidly during the next few years. The present shortage may very well change quickly to an actual surplus. This is nothing to worry about for the present at least. We need many more veterinarians than we now have.

It is good for many individuals, perhaps, but not for the profession as a whole, to have prolonged personnel shortages. A condition of great shortage means that there is not enough competition to keep many members of the profession on their toes, and it means that services which should be rendered by veterinarians are taken over through default by others of inadequate training. During periods of

shortage, many areas of the country are not served properly, or not at all, since it is only natural that the available men will gravitate to regions where practice is easiest or most remunerative. It is only by population pressure that men will be forced into the less desirable areas, and that more men will be forced by competition to give a more complete service than many are now giving. Conditions in a profession are not healthy when the least competent can find employment easily and when too many neglect some kinds of veterinary work because they have enough of a more desirable kind to keep themselves fully occupied.

PRESENT STATUS OF VETERINARY COLLEGES

The Council on Education of the American Veterinary Medical Association has followed the development of the new schools with great interest. It has endeavored to be of service to them and to this end has held a number of conferences with their officials. Upon invitation, the Council has sent representatives to visit the schools to advise upon construction of their buildings, the setting up of their curriculums, and the organization of their staffs. All of these new schools have faced stern competition with each other and with the old established schools in assembling their faculties. Most of them have managed pretty well and it is hoped and believed that all will eventually be able to meet Council standards and be approved by it.

The financial support of all schools is much better than it was a few years ago. Previously, some were well supported, most were on very limited budgets, and several were starved. There are considerable differences today between different schools but the salary scales of all have been greatly improved, they have better physical plants than ever before, and most have more liberal budgets for the support of teaching and research than they ever had previously. The Council deserves at least a small share of the credit for many of these improvements. It has pointed out the weaknesses of each school not only to its dean, but to the president or head of the college or university of which the school is a part. It has emphasized the fact that professors in veterinary subjects generally can command salaries somewhat greater than those in Greek and philosophy, since the schools must compete with industry and private practice as well as other schools for the best men.

With the addition of the new schools, I believe that we now have a professional educational system adequate to serve the needs of our country. I see no need of any additional schools, since these could not get into production soon enough to contribute to the alleviation of the present shortage of veterinarians before the existing schools will largely have accomplished this end.

Our schools now compare favorably with the best that Europe has to offer. Before the first world war, the continental schools of Europe were rightly considered to be the world's best. The disruption of two great wars has delayed progress, however, while we have been able to go forward. We have had opportunities that have been denied to most of the rest of the world. The world leadership in veterinary medicine, as well as medicine, has shifted westward across the Atlantic. This is a source of gratification to us, of course, but we should not become boastful about it or assume too much credit for the situation since it is due as much to the misfortunes of our foreign colleagues as it is to our own efforts.

SUMMARY

In education and practice, a great deal of progress has been made by veterinary medicine during the last century and especially during the last half century. During this period, the uneducated horse doctors have gradually been replaced with men who have been better and better trained in the fundamentals of medical science and its applications to animals. The profession has gained in the esteem of the public, as it has improved its standards of service. It will make further gains as these standards are raised still higher.

Virulence of Tubercle Bacilli

The formation of long cords as distinct from mere clumps appears to be associated with virulence, according to Bloch (*J. Exptl. Med.*, 1950:91, 197), who found that when tubercle bacilli are deprived of this cord factor they are lacking in pathogenicity, although unimpaired in viability. A comparison is drawn between this cord factor of tubercle bacilli and the capsular polysaccharide of the pneumococcus.

A Public Relations Program for Veterinary Medical Associations

L. R. FAIRALL

Des Moines, Iowa

A SUCCESSFUL public relations program for a state or regional association should be simple. Actually, there are only four major mediums of public relations which can be used to any great extent by state or regional groups. The objective should, therefore, be to make use of these four mediums in the simplest, most direct, and effective way possible.

The mediums are: newspapers, radio, television, and farm papers. The association should, within its means, endeavor to maintain a flow of public relations material to papers and radio stations at intervals throughout the year, and it should be prepared to coöperate in television programs as suggested in the January, 1950, JOURNAL.

The public relations effort should not be concentrated at convention time and then neglected for the balance of the year. Convention publicity is good in itself, but people soon forget. Ours is an educational job; and education is a continuous process and the impression created by material issued only at convention time is too fleeting to accomplish the job that needs to be done. Material at intervals of one month in each medium would strike a good average. It is better to have good material once a month than poor material twice a month.

If time and funds are not adequate to undertake public relations work through all four of these mediums, it would be well to start with one medium and then grow into a broader coverage as time goes on. If only one medium can be handled, it would be best to focus on newspapers, as they are most likely to be receptive to our material and also may provide better continuity than other mediums.

In setting up a public relations program, it is well to bear in mind that the American Veterinary Medical Association public relations department and the Associated Serum Producers through the American Foundation for Animal Health are already issuing, month in and month out, through the year, a substantial volume of public relations copy to newspapers, radio stations, and farm papers. However, of necessity, material from these two national sources covers topics which are of general interest. Therefore, the best opportunity for state or district public relations activities lies in the development of copy which is of special interest in that particular area. There are, for example, seasonal problems, feeding problems, and disease outbreaks which are peculiar to each state or locality, and because these are of local interest, material issued by the local association on such subjects will have much greater acceptance—and, in addition, it will have the virtue of not duplicating general material which is already reaching the editor from other sources.

From the practical standpoint, in setting up a public relations program, it is best to hire a local public relations man to advise the committee and to do the work, if the association has sufficient funds. If no public relations firm is available, a local newspaper reporter can often be hired to do this work in his spare time.

If it is not possible to employ a public relations man, then it is best for the association to name one man from the state committee who will be responsible for the whole project. This man should have a great deal of energy, a lot of ideas, and a willingness to devote the time to the job. It is not an "honorary" type of job. It means plenty of hard work and should not be entrusted to anyone who will not agree to assume the full responsibility.

The most important job of the committee chairman will be to develop material for news releases, radio programs, and farm paper articles of a seasonal and timely nature which are of particular interest to the area being served. If two such subjects per month can be developed, so much the better. But, it is better to have one good story a month than two poor ones.

Mr. Fairall is AVMA public relations counsel.

In covering the newspapers, it is necessary to compile a list of the county seat and better weekly newspapers of the state plus a similar list of daily newspapers. Releases should be mimeographed and mailed directly to the news editors of those papers from month to month if sufficient funds are available for mailing costs. If funds are not available, the releases should be furnished to the bureau manager of each of the press bureaus, usually located in the capital city of the state. These bureaus are the Associated Press, United Press, and International News Service. It is best to go first to the chief of each of these bureaus and explain to him that there are timely animal health problems on which owners are not getting enough accurate information, and that your association is going to attempt to send such information to the news bureaus at regular intervals. This personal contact usually paves the way for better acceptance of releases. The same thing should be done with respect to the editors of the leading farm papers in the state. A list of radio stations also should be prepared and the news releases should be sent to the radio stations at the same time they are sent to the newspapers, and marked with the same date for release. If a release concerns livestock problems, it should be addressed to the farm editor of the radio station. If it refers to small animals or human health problems, it should be addressed to the news editor of the station.

The important thing about this plan is to follow it up systematically from month to month and see that some material goes out to the newspapers or news bureaus, radio stations, and farm papers each month. Even if it is not written in good news style, a great deal of it will be acceptable if it is timely and of genuine local interest.

Several other suggestions could be followed with profit: If the state association is not already broadcasting the weekly radio scripts which are furnished by the American Veterinary Medical Association's public relations department, a committee should contact leading radio stations and make plans to get these on the air. Most stations are glad to accept them. It is well to obtain several veterinarians to take turns on the broadcasts, so that one veterinarian will not be burdened with all the resposibility. Some stations will even transcribe a series of the scripts at one time to make the job easier.

The state agricultural college in each state issues extension news material every week to the newspapers of the state. The head of the veterinary department at the college or the extension veterinarian should contact the editor of the extension news service and suggest topics and provide him with material and ideas for news stories. This is a worth-while channel for getting additional news, radio, and television coverage.

Similarly, the state veterinarian is an excellent news channel. He can issue warnings on livestock disease problems and suggestions on better care of animals. Moreover, statements he issues are official and are, therefore, news. Call on him and ask him to do this regularly. If the reporters from the news bureaus are not already visiting his office from day to day for news, they will if he asks them to do so.

It is also desirable for the state association to establish direct contact with the various livestock associations, kennel clubs, feed associations, farm coöperatives, county agents, and other similar groups within the state. It would be worth-while for the veterinary medical association to name a committee whose members would be responsible for contacts with each of these groups. Coöperation of the veterinary medical association should be tendered to them, and a speaker should be offered for the program of their annual convention. Most of them will be glad to have such a speaker and it will be excellent public relations for the profession.

An association not now doing active public relations work should start simply, and develop the program gradually. In developing public relations material, remember that everything issued should be of genuine news value, of genuine service to the public. It should be, at the same time, material which will reflect credit on the profession and the sponsoring association.

Newspapers, radio stations, and farm papers want this information, and television is opening an unlimited opportunity for animal health education. If someone in each association will do the hard work, month in and month out, of making good material available to these mediums, the rewards in better public relations for the profession over the long pull will be of the inestimable value.

Diseases of the Penis and Prepuce of the Bull Requiring Surgery

J. D. WHEAT, D.V.M.
Davis, California

DISEASES of the penis and the prepuce of the bull requiring surgery are many and varied and can produce perplexing problems for the veterinarian who is called upon to treat them.

Tumors of the bovine penis are common, especially in young bulls. These tumors are usually fibrous and nonmalignant with a cauliflower-like appearance, and may be either single or multiple. Many times, the attachment of the tumor will appear to be over its entire circumference but, upon close inspection, the tumor will be found to have a small pedunculated zone of attachment. Surgical removal is indicated and may be easily accomplished by electrocautery or by making an elliptical incision around the base of the tumor and then suturing the resulting wound. With the aid of epidural anesthesia, the penis may be relaxed and withdrawn and the bull operated upon in a standing position if he is of mild temperament, otherwise it is well to cast him. One should place a sterile probe or sound in the urethra before operating, so that this structure is outlined and will not be accidently incised when removing the tumor. The bull should not be placed back in service until healing is complete. It has been reported that later erectile hemorrhage is infrequent when the operation is performed with electrocautery.

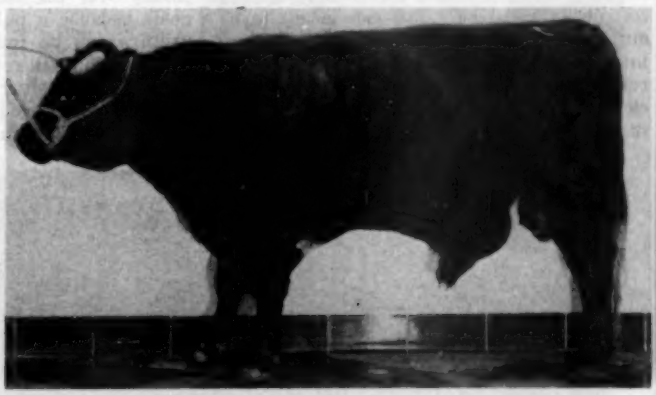

Fig. 1—Abscess of sheath in bull. This can be mistaken for a hematoma of the penis.

HEMATOMAS

Hematomas of the penis are most frequently due to accidents during breeding, when a sudden bending or trauma of the penis is produced. If not treated, the bull is useless for future service. The symptoms consist of a rapidly appearing swelling

Dr. Wheat is assistant professor of surgery in the School of Veterinary Medicine at the University of California, Davis.

just anterior to the scrotum and sigmoid flexure which varies in size, depending on the degree of the damage and of hemorrhage. Prolapse of the prepuce may follow, due to edema. Urination is not interfered with. The area is sensitive to pressure for the first day or two following injury, and the bull may evidence stiffness in movement, but both of these symptoms rapidly disappear. In making a diagnosis, one should determine accurately the structures involved and eliminate the possibility of an abscess of the prepuce. By palpation and movement of the swollen area, one can determine whether the swelling is in the penis. The history of the swelling occurring suddenly after breeding helps in making a diagnosis.

The condition is operable only from four to ten days following injury—when the blood has had time to clot and the hemorrhage has ceased. The bull is cast on his side, and a perpendicular incision 4 to 5 in. long is made through the skin on the side of the hematoma over the most prominent point of the swelling. This incision should be extended down through the tunica albuginea into the blood clot which is then completely removed. The clot is apt to be quite firm and will have to be broken up into pieces with the fingers in order to be removed. Following removal of all the clotted blood, it is well to inject penicillin in water into the cavity to prevent bacterial growth. It is important to obtain primary healing. The incision in the tunica albuginea is then closed with interrupted sutures of No. 2 chromic catgut, followed by suturing of the subcutaneous tissues and the skin.

It is advisable to give the bull about eight weeks of rest before returning him to service. If an aseptic operation has been performed, and it should be to obtain success, no adhesions will be formed and a favorable prognosis may be given.

URETHRAL CALCULI

Urethral calculi occur frequently in bulls and steers, especially in the western states. The etiology is not known, but several theories are given, among which a low vitamin A diet, insufficient water intake, and imbalance or excessive intake of calcium and phosphorus are the most popular. Calculi in the bull usually lodge in the distal curve of the sigmoid flexure. The early symptoms may resemble colic, with the animal kicking at the belly, dribbling urine, stretching, and switching its tail. Palpation of the penis at the point where it passes over the ischial arch aids in diagnosis because a pulsation of the distended urethra can be felt at this point. Rectal examination will reveal a distended bladder. Following these early symptoms, the animal becomes depressed and rupture of the bladder or urethra occurs. The fibers of

Fig. 2—Bull with rupture of urethra allowing urine to gravitate into tissues of ventral abdomen. Note extensive swelling just anterior to scrotum.

the bladder wall may separate and urine slowly seep through into the abdominal cavity, instead of a spontaneous rupture which suddenly releases the entire contents of the bladder. For this reason, one may find a large amount of urine in the abdominal cavity and still palpate a bladder which is partially distended. Rupture of the bladder is further characterized by distention of the abdomen and an odor of urine on the breath. Trocarization of the abdominal cavity through the ventral abdomen will help confirm the diagnosis. In some cases, the urethra ruptures first, allowing urine to gravitate to the ventral abdomen and producing an extensive edema of the prepuce and surrounding subcutaneous tissues.

Treatment before rupture of the bladder or urethra has occurred is successful and consists of making an incision on the midline just above the base of the scrotum and continuing inward until the penis can be grasped and pulled outward. The dorsal artery of the penis is separated from the penis and the penis amputated at the lowest point of the incision. The proximal portion is brought to the outside and the urethra incised for 2 to 3 in. so that it can be laid open and its edges sutured to the edges of the skin incision. The operation is best performed on the animal in a standing position. Fifteen to 20 cc. of a 1 or 2 per cent procaine solution given in the epidural space provides satisfactory anesthesia. If the urethra has ruptured, the same operation is performed and, in addition, the edematous tissues on the abdomen are liberally incised and broken down with the fingers and allowed to slough out.

In the case of a breeding bull, he is of no further use for breeding once a permanent urethrotomy has been performed and should be sold for beef after healing has occurred. If the veterinarian is called soon after the calculi have lodged and before pressure necrosis of the urethra has occurred, he should locate the calculi by means of a piece of lead wire passed up the urethra, make an incision over the point of obstruction down to the urethra, remove the calculi and allow the wound to heal as an open wound with the idea of saving the animal for future breeding use. In most cases, this operation is unsuccessful due to strictures formed and future calculi which will lodge in the same area.

Prolapse of the Prepuce

Prolapse of the prepuce is frequent in the Aberdeen Angus and Brahman breeds and unless the prolapsed portion is irritated or lacerated, it does not interfere with copulation. If injury occurs to the end of the prepuce, it may result in a stricture which will require amputation. This can be performed by infiltrating the tissues with a local anesthetic and placing a series of mattress-type sutures through the wall of the prepuce, including the external and internal layers, just proximal to the stricture. The portion distal to the sutures is then amputated and the cut edge of the internal lining of the prepuce is sutured to the external skin of the prepuce. It is well

Fig. 3—Posterior view of bull with rupture of urethra. Note the distention of the ventral abdomen due to large quantity of urine in the tissues.

to further enlarge the opening by incising through the ventral surface of the prepuce for an inch back from the opening and suturing the external and internal preputial epithelial surfaces together. In this manner, the opening of the prepuce is fanned out, preventing further strictures.

Abscesses of the prepuce occur and may result in the formation of enough scar tissue and adhesions of the prepuce to prevent protrusion of the penis. Liberal incision of the abscess with ventral drainage is indicated. Care should be taken to avoid cutting into the internal lining of the prepuce. These abscesses are sometimes mistaken for hematomas of the penis, so that one should be certain of the diagnosis before attempting surgery.

Lacerations of the prepuce and penis resulting in paraphimosis and necrosis of the involved tissues occur in bulls which are turned out with the cows. The necrotic tissue should be trimmed off and the tissues then coated with acriflavine jelly or petroleum jelly. It is well to wrap the penis with gauze to reduce swelling and give protection. As soon as possible the penis, with its gauze dressing to prevent adhesions, is replaced in the preputial cavity and liberal applications of acriflavine or petroleum jelly are placed inside the cavity. Frequent withdrawal of the penis and application of petroleum jelly until healing has occurred will aid in the prevention of adhesions.

Bulls with adhesions of the prepuce, which are presented for treatment, are rather unsatisfactory patients because it is unlikely that they will be restored to usefulness. Many times the penis is so firmly adherent that it can not be withdrawn, and even when it is possible to break down the adhesions, they reform so rapidly that the penis soon adheres again.

"The Vanishing Sponge."—The need of packing and sewing in fabric sponges is universally conceded in animal surgery, especially in large animals where, in the case of extensive interventions, prompt hemostasis is required to prevent near fatal hemorrhage or virtual exsanguination. But, packed sponges hinder regeneration. They cause pressure necrosis or near necrosis of the trauma's formative cells, widen tissue separation, favor infection and, at the risk of secondary hemorrhage, must be removed. On these accounts, the "vanishing sponge" or the new "oxidized cellulose gauze" should find general acceptance among veterinary surgeons. Says the *Journal of the American Medical Association*: "[It is] one of the most important contributions to technical surgery in recent years."

Dirofilaria Immitis in Abdominal Cavity of Dog

A 9-month-old Dalmatian was spayed on Feb. 12, 1951. On opening the abdominal cavity, a worm resembling a poorly developed ascarid was observed. It was sent to Dr. R. E. Rebrassier, chairman of the Department of Veterinary Parasitology at the Ohio State University. His report follows:

> "Our examination proves it [the worm] to be a female of *Dirofilaria immitis*. In so far as I know, this is the first time that this species of parasite has been reported as occurring in the abdominal cavity of the dog."

A blood examination, made on March 7, was negative for microfilaria.—*Charles B. Dibbell, D.V.M., St. Petersburg, Fla.*

Chloral Dangerous for Cats.—Doses of chloral large enough to induce a useful surgical narcosis are frequently lethal, and the effect of nontoxic doses were proved to be irregular and of short duration in critical tests made by L. Luciano of Argentina (abstr. *Rec. Méd. Vét.*, Oct., 1950). From 0.05 to 0.15 Gm./kg. to narcosis was insufficient and brief, whereas 0.08 to 0.17 Gm./kg. was often toxic. Between these extremes, the narcosis lasted from fourteen minutes to three hours and its depth was variable.

The possible influence of a sire in an A.I. ring can be estimated from the statement by the Central Ohio Breeding Association that Dunnloggin Darkmaster, age 2 years and 8 months, has inseminated 22,499 cows and his semen was used on approximately 15,000 cows during 1950.

The improvement of semen diluents is the chief factor in the upsurge of artificial insemination and its continuation on an increasing level.

CLINICAL DATA

Clinical Notes

Anaplasmosis in animals may be detected by the complement-fixation test, according to work by Gates, *et al*, of the BAI, with the carrier state of anaplasmosis and with splenectomized calves.

There is no known preventive treatment for anaplasmosis and a continuous search is being made for a specific remedy for use in the control and treatment of this disease. —*T. R. Myers, D.V.M., Idaho.*

Dramamine is apparently a nontoxic, powerful, prophylactic and therapeutic drug when used to control the symptoms of motion sickness, according to Harbert and Schiff (*U. S. Air Force Med. J.*, Sept., 1950).

In many instances, drugs are doing more damage than the diseases for which they are being used, says the AVMA Committee on Poultry Diseases. When used without good sanitary practices, drugs only tend to mask a dangerous situation.

No Antibody Production in Chicken Embryo.—Injection of foreign red cells, bacterial virus, or living influenza virus into chicken embryos did not provoke antibody production, and there was no change in the subsequent response of the hatched chick to the corresponding antigen.—*Austral. J. Exptl. Biol. and Med. Sci., 28, 1950: 291-297.*

Potassium deficiency is frequently seen in association with diabetic acidosis and this deficiency has been ascribed to mobilization and depletion of intracellular potassium, dilution of body fluids with administration of parenteral fluids containing no potassium, and loss of this electrolyte in urine during periods of the insulin lack.—*Nutr. Rev. Sept., 1950.*

There is a long step between the findings of physiologists and a fruitful clinical application of endocrine therapy.—*D. E. Jasper, D.V.M., California Vet., Sept.-Oct., 1950.*

Farm animals are bruised to such an extent that the meat lost is costing livestock owners as much as $33,000,000 annually, says the National Live Stock Loss Prevention Board.

Actinomycosis in Turkeys.—Actinomycosis of turkeys is described as a new disease by J. F. Olney (*Vet. Med.*, Oct., 1950). The symptoms are not particularly characteristic but the lesions of the liver, cecums, and cloaca are hard, more or less round, circumscribed nodules.

Adsorbed Hog Cholera Vaccine.—Experiments in mice and pigs showed that the adsorbed vaccine produced a solid immunity, in fact a stronger immunity than was produced by simultaneous use of serum and virus.—*A. Hupbauer in Vet. Arhiv., 20, 1950.*

ACTH is a highly refined natural product and cortisone is a synthetic steroid hormone. Both have the same effect. Work with these items has raised more questions than it has answered, and progress is, as yet, restricted to the field of research and has not reached the field of treatment.—*F.D.W. Lukens, M. D., Pennsylvania.*

A survey of Salmonella (paratyphoid) organisms found in Alberta would "tend to show that Salmonella infections of birds and animals could be of decided public health importance," according to C. H. Bigland and G. S. Wilton (*Canad. J. Comp. Med. and Vet. Sci., 14,* (July, 1950): 236-241.) People could be infected by eating improperly cooked flesh of active cases or carrier birds and animals; or by consuming food contaminated by excreta from these birds or animals.

Incidence of Salmonella in Apparently Healthy Dogs

HENRY E. ADLER, D.V.M.; ERNEST H. WILLERS, D.V.M.; MAX LEVINE, Ph.D.

Honolulu, Hawaii

IN STUDYING an outbreak of encephalitis in a group of distemper-vaccinated dogs, an organism which proved to be *Salmonella cerro* was isolated from 1 of the sick animals. The serum of this dog agglutinated the organism in a dilution of 1:160. At autopsy, the main lesions were found in the digestive tract. Examinations of the other dogs in the kennel were negative for Salmonella.

At about this time, a paper by Wolff[11] was published, in which a review of the incidence of Salmonella in dogs was presented. Considering these facts, it was decided that it might be significant to determine the incidence of recognized enteric pathogens, particularly of the Salmonella group, in dogs which were being brought into the Territory of Hawaii through the rabies quarantine station.

REVIEW OF LITERATURE

In 1947, Wolff,[11] discussing the possible public health significance of animal Salmonella infections, called attention to reports of three outbreaks of human salmonellosis in the literature, in which dogs appeared to be the source of infection. The following year, Wolff *et al.*,[12] presented a more detailed review of the literature on salmonellosis in dogs. On the basis of their own observations of dogs in the Michigan State College veterinary clinic, the Lansing Animal Shelter, and private kennels, they pointed out that whereas the findings in the dogs at the shelter and clinic indicated a possible association of incidence of salmonellosis with distemper and enteritis, the results obtained on dogs in private kennels suggested the possibility that the dogs were merely transient carriers of Salmonella. In either event, since many of the types encountered are known to be pathogenic for man, the view was expressed that dogs should be considered a potential source of human salmonellosis.

Bruner and Moran,[2] in a study of Salmonella infections in domestic animals, reported 73 outbreaks of salmonellosis in dogs, with isolation of 103 cultures which fell into 26 types. *Salmonella typhimurium* was by far the most common, having been isolated in 40 per cent of the outbreaks. Among other Salmonella known to be associated with human infections, which are particularly worthy of note, were *Salmonella oranienburg, Salmonella newport,* and *Salmonella anatum.*

Kintner[3] called attention to the frequency of Salmonella contamination of some common components of the rations of dogs. He pointed out that incidence of Salmonella was much higher in dogs suffering from distemper than other dogs he had studied and that, in a number of instances, dogs without any diarrheal or other symptoms were also found to harbor Salmonella. He further noted that feeding cultures of *S. typhimurium* and *Salmonella enteritidis* to healthy, mature dogs failed to elicit any evidence of either illness or establishment of a carrier state.

In papers by Craige [4-6] Salmonella and Proteus were considered among the etiologic agents of diarrhea in dogs. In a discussion of one of these papers, it was pointed out by Gotham that the genus Proteus was so frequently present in the intestinal tract of dogs that it might be considered part of the normal intestinal flora.

Watt and DeCapito[10] in a study of salmonellosis in man and animals in Hidalgo County, Texas, found 39 (3.4%) of 1,156 dogs to be harboring Salmonella among which 19 distinct types were present. Among the types cultured which are known to be pathogenic for man were *Salmonella schottmulleri* (para B), *S. typhimurium, Salmonella derby, S. oranienburg, and S. anatum.*

Cruickshank[8] found Salmonella in 5 (1%) fecal samples from 500 dogs, including *S. typhimurium* (2), *S. newport* (2), and 1 which was probably *Salmonella dublin.*

MATERIALS AND METHODS

The situation in Hawaii affords a particularly desirable opportunity for determining the incidence of Salmonella in apparently healthy dogs. Since March 1, 1912, dogs have not been permitted to enter the Territory except after a sojourn in quarantine for 120 days on premises provided by the Board of Agriculture and Forestry. That this practice has been effective in keeping rabies out of the Territory is indicated by the fact that no case of rabies has ever been diagnosed here. For the purposes of this study, dogs at the quarantine station appeared to be a reasonable source of healthy animals for, presumably, if they were not apparently healthy, they would not have been subjected to a trip across the ocean.

Quarantined dogs are kept in individual kennels which are provided with concrete runs having

From the Board of Agriculture and Forestry (Adler, Willers), and the Bureau of Laboratories, Territorial Department of Health (Levine), Honolulu, Hawaii.

Dr. Adler is at present at the College of Veterinary Medicine, State College of Washington, Pullman.

Appreciation is expressed to Mr. George Ching of the Department of Health and to Mr. Henry Ho of the Board of Agriculture and Forestry for their technical assistance.

gravel-filled center spaces. Between dog entries, the kennels and runs are cleaned with lye, or other suitable detergent, and the gravel in the center spaces renewed or turned over and soaked with saturated ammonium sulfate to dehydrate parasite ova. Each day, the animals are fed one or more cooked meals prepared in a central kitchen. All uneaten food is collected within one hour (usually one-half hour) after feeding and sent out for disposal. New dogs entering the quarantine station are examined by the station veterinarian and dipped for external parasites (2% DDT, 0.25% chlordan) before being assigned to a kennel. Fecal and blood samples are routinely collected for parasite examination. The entire quarantine area is sprayed with DDT (5%) at three-to six-month intervals as an insect control measure.

The practice of feeding the dogs only cooked foods should effectively eliminate the possibility of infection with Salmonella from foods served them while in quarantine. Furthermore, random cultures of food being served the dogs were examined from time to time for the presence of Salmonella organisms and always with negative results.

Samples of feces were taken from dogs at irregular intervals after their arrival. When the investigation was first begun, specimens were taken from dogs whose sojourn in quarantine varied from ten to more than fifty days, but toward the latter part of the studies, many specimens were taken during the first few days after arrival of the dogs. These specimens consisted of morning stools which were brought to the laboratory of the Board of Agriculture and Forestry within three hours after they were passed.

The technique for detection of Salmonella in feces was briefly as follows: About 2 Gm. of the inner portion of the fecal samples were placed in tetrathionate and selenite broths. (On the basis of the findings on the first 70 samples, selenite was discontinued.) The inoculated broths were incubated for eighteen to twenty-four hours at 37 C. and then streaked onto SS agar. Representative nonlactose fermenting colonies were fished to Kligler iron agar. Those tubes exhibiting Salmonella-like reactions (alkaline slant with acid and gas in the butt, with or without hydrogen sulfide production) were examined for urease production by a modification of the rapid method of Anderson[1] which could be depended upon to provide evidence of urease production in a large proportion of instances in less than thirty minutes.*

All urease negative cultures were then inoculated into dextrose, lactose, sucrose, salicin, mannitol, maltose, and xylose broths, for detection of acid and gas production; into semisolid agar medium for determination of motility; and tryptophane broth for production of indol. They were also tested for ability to produce acetylmethyl-carbinol (the Voges-Proskauer reaction) and utilization of citrate as the sole source of carbon, employing Simmon's citrate agar. Cultures which showed biochemical reactions characteristic of the genus Salmonella were then examined for their antigenic components in the laboratory of the Territorial Department of Health and sent for confirmation to Dr. Edwards at the Communicable Disease Center Laboratories in Atlanta, Ga.

In addition to examination of fecal specimens for detection of members of the genus Salmonella, all samples were also examined for parasite ova, cysts, and larvae, by the following technique. At least 2 Gm. of feces were mixed with a saturated sodium nitrate solution in 9 cm. by 2½ cm. cylin-

*The urease test of Anderson, as modified by one of us (Levine), is briefly as follows:

Stock *Solution A (Urea Solution)*

Alcohol (95%)	2.0 ml.
Urea	2.0 Gm.
Distilled water	4.0 ml.

Do not sterilize. Store in ice box. If urea precipitates out, warm in hands till dissolved.

Stock *Solution B (Buffer)*

K_2HPOH	0.1 Gm.
KH_2POH	0.1 Gm.
NaCl	0.5 Gm.
Phenol red (0.2%)	1.0 ml.
Distilled water	100.0 ml.

Sterilize solution B in autoclave.

Test Solution.—For use, dilute solution A with 19 volumes of solution B. The mixture must not be heated and need not be filtered for sterilization.

Inoculate 0.1 cc. of test solution in a clean (need not be sterile) test tube, heavily from growth of the test culture on Kligler or other agar medium. Place in water bath or incubator at 37 C. and observe for evidence of decomposition of the urea which is indicated by marked alkalinization of the medium.

drical bottles, and the parasite forms allowed to rise for ten minutes against glass slides. Three slides were employed for each specimen.

All dogs were also examined for presence of blood parasites. For this purpose, several milliliters of blood were obtained by venipuncture. About 0.1 ml. of the serum was taken from the clotted blood, together with some blood cells, and portions spread over each of three microscope slides which were then examined.

The visceral organs of an animal that died during the course of this study were cultured by searing the tissue and then obtaining large amounts of material with a Pasteur pipette which was provided with a vacuum rubber bulb. These tissues were seeded on plain agar, blood agar, and into thioglycolate broth. Levaditi's silver sections were made of the kidneys for examination for possible presence of Leptospira. Scrapings for detection of inclusions characteristic of distemper were made by the method of Green and Evans.[1] Fecal cultures of the animals were examined as previously described.

TABLE 1—Types of Salmonella and Frequency of Detection in Feces of 295* Apparently Healthy dogs

Salmonella type	Frequency of Detection (No.)	(%)
S. anatum	20	6.8
S. montevideo	14	4.8
S. bovi-morbificans	3	1.0
S. bredeney	1	0.3
S. typhimurium*	1*	0.3
Total	39	13.2

*One animal, a pup born at the station, was sick and died. On autopsy, S. typhimurium was isolated from the spleen but the feces was negative for Salmonella.

RESULTS

Incidence of Infected Dogs.—Of 295 apparently normal dogs examined, Salmonella were detected in the feces of 38, and another was found to be positive on autopsy. The incidence of various types of Salmonella among the 39 positive specimens is indicated in table 1.

Salmonella typhimurium was isolated from the spleen of a pup born at the station. Fecal cultures of this pup and all its litter mates and the dam were negative for Salmonella. The veterinary clinician attributed the death of this pup to distemper. Levaditi silver sections of the kidneys were negative for Leptospira and scrapings of the bladder did not reveal any inclusions.

In contrast to some of the previous reports in the literature, *S. typhimurium* was not found in any of the healthy dogs and in the one instance in which it was found, the pup died. This may be significant in conjunction with the paper by Bruner and Moran[2] previously mentioned.

Salmonella anatum was isolated from 20 dogs (51% of the positive findings and 6.8% of the dogs examined). *Salmonella montevideo* was found in 14 dogs (36% of the positive findings and 4.8% of the 295 dogs examined). These findings are of interest to the local area because *S. anatum* has been associated with human cases of enteritis, and *S. montevideo* has been responsible for a number of outbreaks of food poisoning.[3] That the infected animals were asymptomatic may be indicative of their possible hazard as potential sources of food poisoning outbreaks.

Source, Age, and Period of Quarantine of Infected Dogs.—The dogs with positive Salmonella findings had come from many parts of the United States (California, Florida, Maryland, Mississippi, North Carolina, and Washington), Guam, and the South Pacific Islands. Information as to their actual home states, mode of travel of the animals, period of travel en route, etc., were not available, so that the information of origin can not be considered of any great significance except that it indicates that the dogs had come from many areas of the mainland.

TABLE 2—Period After Arrival and Type of Salmonella Detected in 15 Dogs of Known Age

Age	Salmonella type isolated from stools: anatum	montevideo	bredeney	Origin of dog	Salmonella detected (days after arrival)
3 mo.	—	x	—	Calif.	3
3½ mo.	—	—	x	Calif.	1
4 mo.	—	x	—	Calif.	9
5 mo.	—	x	—	Calif.	9
8 mo.	—	x	—	?	7
8 mo.	x	—	—	Wash.	8
1½ yr.	x	—	—	Wash.	8
1½ yr.	x	—	—	Wash.	22
1½ yr.	—	x	—	?	4
2 yr.	x	—	—	Calif.	7
2½ yr.	—	x	—	Miss.	4
3 yr.	x	—	—	S. Pacific	14
4 yr.	—	x	—	?	1
4 yr.	x	—	—	Fla.	7
10 yr.	x	—	—	Md.	17

The age of the dogs harboring Salmonella was available in 15 instances. The type of organism, the state of origin, and the

length of time these dogs had been in quarantine when Salmonella were found are indicated in table 2. Table 3 shows the distribution of the positive findings with respect to Salmonella type and the sojourn of the dogs in quarantine when Salmonella were first detected. In 59 per cent of the positive findings, the dogs had been at the quarantine station less than ten days, and in 20 per cent more than forty-five days. It is apparent from tables 2 and 3 that there was no particular relation between type of organism, age of the animal, or period of quarantine. It is particularly desired to point out that many of these dogs harbored *S. anatum*, and *S. montevideo* for two to six weeks without showing any symptoms to arouse suspicion of the caretakers or the veterinary supervisory personnel. Furthermore, since possibility of infection of the animals by the food was eliminated by supplying only cooked rations, the animals were presumably harboring the Salmonella on arrival in the Territory and, therefore, constitute a possible carrier reservoir for human salmonellosis.

TABLE 3—Period of Sojourn of Dogs in Quarantine when Salmonella Was Detected

Days after arrival	Number of dogs positive for Salmonella						
	anatum	monte-video	bovi-morbificans[1][2]	bredeney	typhi-murium	Total (No.)	(%)
0-1	3	3	1	----	----	7	18
2-5	3	4	----	----	----	7	18
6-10	5	4	----	----	----	9	23
11-15	2	----	----	----	----	2	5
16-30	2	----	----	----	----	2	5
31-45	1	----	----	----	----	1	3
>45	4	2	1	----	1	8	20
?	----	1	1	1	----	3	8
Total	20	14	3	1	1	39	100

In the course of attempted isolation of Salmonella, a large number of colonies picked to Kligler iron agar turned out to be members of the genus Proteus. Although no attempt was made to ascertain what proportion of the dogs harbored Proteus, it is estimated that it comprised at least 75 per cent. This group of organisms, therefore, appears to be a common inhabitant of the digestive tract of well-fed, meat-eating, normal dogs.

Incidence of Parasites.—The data on the incidence of parasites with relation to the presence or absence of Salmonella are summarized in table 4. Parasites were found in 11 (28%) of the 39 dogs from which Salmonella were isolated, and 90 (35.6%) of the 256 negative dogs. The difference is not significant. There is apparently no relation between infection with parasites and the probability of presence of Salmonella.

TABLE 4—Incidence of Parasites and Detection of Salmonella in Dogs

Salmonella	Present*		Not found**	
Types of parasites found	Parasite-infected dogs			
	(No.)	(%)	(No.)	(%)
Hookworm	4	10.2	44	17.2
Ascaris	1	2.6	18	7.0
Coccidia	3	7.7	7	2.7
Tapeworm	----	----	10	3.9
Whipworm	1	2.6	7	2.7
Blood microfilaria	2	5.1	4	1.6
Total	11	28.2	90	35.1

*Salmonella isolated from 39 dogs.
**Salmonella not found in 256 dogs.

SUMMARY

1) Salmonella were detected in 39 (13.2%) of 294 apparently healthy dogs at the quarantine station and 1 sick pup born there. *Salmonella typhimurium* was isolated from the spleen of the pup on autopsy; whereas *Salmonella anatum* was found in the feces of 20 (6.8%), *Salmonella montevideo* in 14 (4.8%), *Salmonella bovi-morbificans* in 3 (1%), and *Salmonella bredeney* in 1 (0.3%) of the animals examined.

2) Members of the genus Proteus were so frequently isolated that most species appear to be normal inhabitants of the intestinal tract of well-fed, meat-eating dogs.

3) There was no apparent relation between detection of Salmonella and subclinical infection with parasites.

4) The findings indicate that the animals were harboring Salmonella on arrival in the Territory and that they did not develop any symptoms which might have aroused the suspicions of either the caretakers or veterinary supervisory personnel for the full quarantine period of 120 days. In view of the fact that *S. montevideo* and *S. anatum*, which have been responsible for a number of outbreaks of food poisoning in Hawaii, were isolated from 11.6 per cent of the 295 dogs examined, and these species constituted 87 per cent of the positive findings, the question of the desirability of instituting routine bacteriologic fecal ex-

aminations of incoming dogs is worthy of consideration.

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Cortisone for Canine Eye Infections

JEROME H. RIPPS, D.V.M.

Asbury Park, New Jersey

Prior to the synthetic production of cortisone, the prohibiting factors in the use of this drug in small animal practice were cost and lack of availability. The latter, for a while, was greatly alleviated and the former has been greatly reduced.

Along with many other serious ailments, complicated eye diseases have offered a challenge in small animal work. Knowing of the wonderful results obtained in man it was decided to use cortone® (Merck) on infections of the eye. Reports of two interesting cases follow.

Case 1.—A 4-year-old male Cocker Spaniel used at stud, weighing 24 lb., was admitted to the hospital with a glaucomatous right eye complicated with keratitis and a staphyloma of the anterior chamber. In short, a panophthalmitis. The temperature was 103.5 F. The course of treatment consisted of 25 mg. (1 cc.) of cortone injected intramuscularly every eight hours for forty-eight hours, then every twelve hours for one day, then once daily. In forty-eight hours, the temperature was normal and resorption of the staphyloma had occurred. At the end of the fifth day, treatment was stopped and only a very insignificant area of keratitis remained. All other symptoms had disappeared and, from a clinical viewpoint, the animal was normal.

Case 2.—A 15-lb. mongrel male, 10-month-old puppy that had just gone through the various phases of distemper was returned to the hospital with a bilateral keratitis. Routine treatment was begun and after two days, the left eye developed a corneal ulcer that encompassed one-third of the corneal surface. A pannus was also now present, growing down from the dorsal rim to the ulcer. At this point, cortone treatment was begun, using the same pattern of injections as in the other case. However, 20 mg. were used with each injection. In addition, two drops were instilled into each eye morning and night. On the fourth day after cortone treatment was begun, the ulcer no longer stained with fluorescein and the pannus began to fade. The keratitis was at least 90 per cent cleared. On the sixth day, the pannus was almost completely gone. The patient was discharged on the tenth day.

In the first case, only cortone was employed in the treatment, and in the second case, once it was instituted as treatment, it too was the only drug used. This, I feel sure, justifies my enthusiasm for its use in eye infections, since with many similar eye infections, I have previously never gotten the spectacular and dramatic results I observed in these 2 cases. The results easily warrant the additional expense involved in using this drug.

Dr. Ripps is a general practitioner in Asbury Park, N.J.

Studies made at the Montana Agricultural Experiment Station showed that a very small amount of ergot in barley is detrimental to the brood sow and her litter.

Billions of parasites are sharing the expensive rations which farmers feed to their livestock, and the result is a tremendous loss both to the farmers and the public, says the AVMA Committee on Parasites.

Certain Sulfonamides and Antibiotics in the Treatment of Experimental "Salmon Poisoning" in Dogs

D. R. CORDY, D.V.M., Ph.D., and JOHN R. GORHAM, D.V.M., M.S.

Pullman, Washington

RECENT WORK by Cordy and Gorham[1] on so-called "salmon poisoning" in dogs and foxes has suggested a Rickettsia-like etiologic agent. Failure to infect embryonating eggs and irregular results in mice have made precise classification difficult. Early work by Coon *et al.*[2] and Shaw and Howarth[3] demonstrated the efficacy of sulfanilamide in treatment of natural and experimental cases. It is known that certain groups of etiologic agents may be partially differentiated by their susceptibility or insusceptibility to sulfonamides and antibiotics. Therefore, it was thought useful to determine the pattern of susceptibility of the agent of salmon poisoning as an indirect means of roughly classifying the organism. Only a limited number of drugs was used and precise therapeutic levels were not sought.

Thirty-three healthy dogs of various breeds and ages were infected in groups by intraperitoneal injection of 2 ml. of a 20 per cent nutrient broth suspension of lymph nodes from typically affected cases. In the sulfonamide experiment, treatment of 3 dogs was begun on the fifth, eighth, and fourteenth days, respectively, after the appearance of symptoms. In the antibiotic experiments, treatment was initiated at twelve to forty-eight hours after the first temperature rise. Table 1 shows the therapy used and the results obtained in each experimental group.

The dogs given sulfonamides were in the advanced stage of the disease but became afebrile within forty-eight to ninety-six hours after the initiation of therapy. Within the next few days, they rapidly reached a state regarded as clinical recovery. These 3 dogs were subsequently challenged at different times by feeding infected fish and by intraperitoneal injection of infected lymph node suspension. In no case was salmon poisoning produced. Fluke infection was established following feeding of fish, but no symptoms ensued. Control animals infected by similar routes at the same times succumbed to the disease. Recovered dogs from the other groups have not been challenged.

The dogs given aureomycin* became afebrile within twelve to 108 hours after the first inoculation. Clinical recovery was clear-cut and prompt. In this group, painful edematous swellings were observed at the site of injection. No untoward reactions occurred in the administration of the other antibiotics.

The dogs given penicillin** became afebrile within twenty-four to thirty-six hours after the first dose. Clinical recovery was as prompt as in the aureomycin group.

TABLE 1—Sulfonamides and Antibiotics in the Treatment of Salmon Poisoning

Therapeutic agent	Treated dogs		Control dogs	
	Recovered	Died	Recovered	Died
Sulfonamides[1]	3	0	0	1*
Aureomycin[2]	6	0	0	4*
Penicillin[3]	4	0	0	1
Dihydrostreptomycin[4]	2	2	0	2
Chloromycetin[5]	4	0	0	4*

[1]Single intraperitoneal injection of sterile solution of 5 per cent sulfamerazine and 5 per cent sulfamethazine at the rate of 1½ gr. per pound total sulfonamides, followed by ½ gr. per pound of sulfamerazine orally twice daily for one to three days when animal became afebrile and symptomless.

[2]Subcutaneous injection of 10 mg. per kilogram every twelve hours for four doses.

[3]Three daily intramuscular injections, each of 100,000 units of crystalline penicillin G potassium and 300,000 units of crystalline penicillin G suspended in peanut oil containing 2 per cent w/v aluminum monostearate.

[4]Two dogs received 0.25 Gm. of dihydrostreptomycin sulfate intramuscularly twice daily for five days (total 2.5 Gm.). Two dogs received 0.5 Gm. twice a day for five days (total 5 Gm.). One dog in each pair died.

[5]Given 73 to 90 (av. 80) mg. per kilogram orally per day for seven days. Daily dose divided into three equal parts given every eight hours.

*Control group includes 1 dog killed in extremis for tissue for further transmission.

Lymph nodes were harvested from 2 dogs fourteen and sixteen days after recovery following aureomycin therapy, pooled,

From the Department of Veterinary Hygiene and Pathology, College of Veterinary Medicine, State College of Washington (Cordy); and the Bureau of Animal Industry, U. S. Department of Agriculture, in coöperation with the State College of Washington, Agricultural Experiment Station, Fur Animal Disease Laboratory (Gorham). Dr. Cordy is now at the School of Veterinary Medicine, University of California, Davis.

*The aureomycin used in this work was supplied through the courtesy of the Lederle Laboratories, American Cyanamid Co., New York, N. Y.

**The penicillin used in this work was supplied through the courtesy of the Upjohn Co., Kalamazoo, Mich.

and 6.5 ml. of a 20 per cent broth suspension was injected intraperitoneally into 2 foxes. The foxes remained unaffected. The same procedure was followed with 2 dogs twenty days after recovery following penicillin therapy, with similar results. These results appear to indicate that during this time following recovery, the agent was either dead or present in amounts too small to produce clinical infection. These foxes have not subsequently been challenged, but all foxes previously used from this colony have been highly susceptible.

The dogs given dihydrostreptomycin showed irregular continued fever until thirty-six to sixty hours after the last dose in 3 of 4 cases, regardless of whether they subsequently died or recovered. The fourth case was afebrile forty-eight hours after the first dose but died five days later.

Dogs receiving chloromycetin† showed intermittent hyperthermia for about five days after initiation of treatment, and 1 had transient diarrhea.

All of the untreated control dogs had the typical continuous high temperature and other symptoms of salmon poisoning. Necropsy showed the typical lesions of the disease in all treated or control dogs that died or were destroyed. Elementary bodies were found in lymphoid tissues of all such animals. None of the recovered dogs were killed immediately, but several were destroyed some weeks later and in none of these were elementary bodies found in lymphoid tissues.

It would appear that sulfonamides, aureomycin, penicillin, and chloromycetin, as employed in these trials, were highly effective in the treatment of experimental salmon poisoning. Dihydrostreptomycin, in the levels used, was only 50.0 per cent effective. It is admitted that these were very small groups of dogs, but the extreme mortality in untreated controls indicates that the results have distinct worth as measures of drug efficacy.

From the results of these trials, it would appear that the agent of salmon poisoning shows a therapeutic spectrum like those of trachoma, inclusion conjunctivitis, and certain members of the psittacosis-lymphogranuloma group. Other members of the latter group and the classical rickettsias differ in their susceptibility to certain of the drugs tested.

†The chloromycetin used in this work was supplied through the courtesy of Parke, Davis and Co., Detroit, Mich.

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Sulfonamides have been reported as effective in the treatment of human cases of trachoma and inclusion conjunctivitis.[4,5] In the psittacosis-lymphogranuloma group, sulfonamides gave protection in embryonating eggs and mice experimentally infected with psittacosis, mouse pneumonitis, hamster pneumonitis, and lymphogranuloma venereum, but not with ornithosis, meningopneumonitis, Louisiana pneumonitis, S. F. pneumonitis, or feline pneumonitis.[6,7] Levinson *et al.*[8] found sulfonamides ineffective in human cases of ornithosis. In lymphogranuloma venereum in man, sulfonamides have been reported beneficial.[9,8] Sulfonamide therapy is reported of no value in human infections with the classical rickettsias.[9]

Penicillin is reported effective in the treatment of trachoma and inclusion conjunctivitis.[5] Experimental infections in eggs and mice by all members of the psittacosis-lymphogranuloma group were benefited by penicillin therapy.[6,7] Human cases of psittacosis[10,11] and ornithosis[12] gave a good response to the drug. According to Fleming,[13] penicillin is ineffective in human cases of lymphogranuloma venereum. The drug is not of value in the classical rickettsial infections in man.[9]

Aureomycin has been reported effective in trachoma and inclusion conjunctivitis by Braley and Sanders.[14] The drug was active against experimental infections with psittacosis, meningopneumonitis, S. F. pneumonitis, feline pneumonitis, mouse pneumonitis, and lymphogranuloma venereum in eggs.[15] Experimental infections in mice with psittacosis, Louisiana pneumonitis, feline pneumonitis, and lymphogranuloma venereum responded to aureomycin therapy.[16,18] Lymphogranuloma venereum in man has been successfully treated with the drug.[16-17] Aureomycin gave protection in experimental infections of eggs and mice with *Rickettsia prowazeki, Rickettsia mooseri, Rickettsia orientalis, Rickettsia akari, Rickettsia burneti,* and *Dermacentroxenus rickettsi.*[18] Schoenbach, Bryer, and Long[19] found aureomycin effective in Brill's disease and Rocky Mountain spotted fever (eastern type) in man. Lennette *et al.*[19] reported successful aureomycin therapy in Q fever in man.

Chloromycetin has been reported effective in the treatment of trachoma.[20] The drug has been beneficial in treatment of experimental infections in eggs and mice with lymphogranuloma venereum and two strains of psittacosis.[21] Chloromycetin gave protection in eggs infected experimentally with *R. prowazeki, R. mooseri, R. akari, R. orientalis,* and *D. rickettsi.*[22-23] Mice infected with *R. orientalis* and *R. akari* also showed protection.[22] Smadel[24] reported chloromycetin useful in epidemic and endemic typhus and very valuable in mite typhus in man. Carson *et al.*[25] successfully treated

2 cases of Rocky Mountain spotted fever in man with chloromycetin.

Streptomycin is said by Waksman[29] to be ineffective against trachoma and lymphogranuloma venereum in man. This author also quotes work indicating that the drug is without value in experimental infections of psittacosis, mouse pneumonitis, and lymphogranuloma venereum in eggs and mice. Similar results were obtained by Hamre and Rake[5] in eggs experimentally infected with feline pneumonitis or lymphogranuloma venereum. Morgan and co-workers[27] found poor protection in eggs infected with *R. prowazeki, R. mooseri,* or *R. orientalis.*

SUMMARY

Sulfonamides, penicillin, aureomycin, and chloromycetin were found to be highly effective in the treatment of experimental salmon poisoning infections in dogs. Dihydrostreptomycin was only 50.0 per cent effective. The agent of the disease appears to have a therapeutic spectrum similar to those of trachoma, inclusion conjunctivitis, and certain members of the psittacosis-lymphogranuloma group.

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Chronic blepharitis caused by dandruff (*Pityrosporum ovale*) is a common eye condition.

Abdominal Puncture in Mule

BYRON F. HILLIARD, D.V.M.

Bowersville, Georgia

On June 25, 1950, I was called to see a 30-year-old male mule with a laceration about 2 in. long on the right side of the abdomen and about 12 in. in front of the fold of the flank.

The temperature was 100.4 F. A bloody, thin, exudate drained from the wound, and the surrounding area was swollen, very sensitive, and hot. The intestine could be seen in the opening and the mule's struggling forced about 14 in. of it through the opening.

The animal was cast and tied. Procaine hydrochloride (2 %) was injected into the tissues around the opening. The skin was incised about 8 in. and the intestine was washed in quaternary ammonium compound solution and returned to the abdominal cavity. The abdominal muscles and peritoneum were necrosed, and this necrotic tissue was removed to make an opening about 8 in. by 4 in. in the muscles. The edges of the muscles could not be brought together. The skin was sutured, closing the opening only by a layer of skin.

Simple interrupted sutures of 26-gauge steel wire were used in two rows. One row was placed about ½ in. from the margin of the opening, and the other row was placed about 2 in. from the edge of the opening.

Penicillin in oil (1,500,000 units) was given intramuscularly and smear 62 was applied to the wound to keep out screwworms.

On the second day, the temperature was 100.6 F., and the appetite was good. Penicillin in oil (1,500,000 units) was given intramuscularly. On the third day, the temperature was 100 F., the appetite good, but edematous swelling around the sheath and ventral surface of the abdomen was apparent. Again, 1,500,000 units of penicillin was given intramuscularly. The mule was exercised and cold packs were applied to the swelling, which, for the next seven days, was the only treatment. On the tenth day the swelling was gone and the wound was healing nicely. The wound is now healed, except for a hernia—the intestine making a large bulge at the sight of injury.

Dr. Hilliard is a general practitioner in Bowersville, Ga.

Preventing Scours in Calves

Under this title, Dr. E. A. Woelffer of Wisconsin tells readers of *Hoard's Dairyman*: "When disease sets in and digestive disturbances occur, reduce the feed, make the calf comfortable, isolate if possible, and obtain professional counsel. If treatment is indicated, follow the advice of your veterinarian. The case may be simple or it may be complicated. Proper treatment can not be instituted intelligently without a careful diagnosis. A correct diagnosis is often the difference between success and failure. Your veterinarian is best qualified to advise both on prevention and treatment."

Mastitis Treatment

Specific and mixed infections of mastitis were treated most effectively with 50,000 units each of dihydrostreptomycin and penicillin in an ointment base. From 88 to 100 per cent of the infected quarters showed no organisms after this treatment. The organisms present in the quarters treated were *Streptococcus agalactiae, Micobacterium pyogenes* var. *aureus*, and the coliform bacteria.—*North Am. Vet., Oct. 1950: 656-659.*

Phenothiazine for Horses

No harmful effects were noted following a second year of continuous therapy of horses with 0.5, 1.0, 2.0, or 4.0 Gm. of phenothiazine daily. There were significant reductions in the number of bloodworms, immature *Strongylus vulgaris*, in the anterior mesenteric artery and its immediate branches, but no evidence that strains of the parasite became resistant to the action of phenothiazine.—*Todd et al., Vet. Med., Nov., 1950.*

Atropine Sulfate in Phosphorus Poisoning.—Atropine sulfate—by mouth, subcutaneously, or intravenously—has been recommended as a specific antidote for poisoning by the newer phosphorus-containing insecticides.—*Current M. Digest, July, 1950.*

Common Toxicologic Findings in Connecticut

HARRY J. FISHER, A.B., Ph.D.

New Haven, Connecticut

FOR MANY YEARS, the Connecticut Agricultural Experiment Station has been examining animal viscera, feeds, foods, and miscellaneous materials suspected of containing poison. The results of the earliest examinations were not published because there never has been a Connecticut statute specifically directing that toxicologic examinations of animals be made. The Station got into the work because the farmers requested it and there was no other agency to do it. From time to time, reports of the Station have noted that such examinations were becoming burdensome, but the service has never been discontinued.

The first reference to toxicologic examinations appeared in the report of the Station for 1907, which stated that "The station is constantly called upon by individuals to make examinations of . . . bodies of animals suspected of being poisoned." This report did not list the number of samples examined nor give any details of the results of the examinations. No further reference to toxicologic tests appears until 1911, when it was reported that: (1) The stomach contents of a man were tested for wood alcohol with negative results; (2) arsenic was found in a chicken and in the soil where the chicken was feeding; (3) some weed leaves contained Paris green; (4) a rat poison contained phosphorus; and (5) no poison was found in 3 cows.

Annually since 1911, each station report refers to poison examinations, but the accounts of the work done are incomplete until 1936. In some cases, only the total number of samples is stated. The animals examined during the earlier years were mostly cows, chickens, geese, and ducks with comparatively few dogs. In recent years, the number of dogs submitted for examination has exceeded the cattle and poultry combined. Perhaps this is a reflection of the changing pattern of veterinary practice.

Presented at the annual meeting of the New England Veterinary Medical Association at New London, Conn., Oct. 10, 1950.

From the Connecticut Agricultural Experiment Station, New Haven.

Following are highlights of the Station's tests prior to 1936:

In 1912, two samples of wheat middlings contained Paris green; arsenate of lead was found in 1 cow, and arsenic but no lead in another group of 4 cows.

In 1915, arsenic was found in apples on which cows had fed and died; the following year, arsenic was found in 3 heifers.

In 1917, the first poisoned dog was reported; the poison was mercury.

In 1918, Paris green was found in a cow and some chicks, and strychnine in a poison bait; the following year, there was 1 case each of the same poisons.

In 1920, phosphorus was found in 2 geese and a duck, and in 1921 some pins, nails, a staple, and bits of brass were found in a goose's gizzard.

In 1923, there was one sample each of phosphorus, strychnine (in a dog), and lead arsenate, and a poisoned bait containing chromium. A sample of wine made in a galvanized tub that had caused illness contained 370 parts per million (p.p.m.) of zinc oxide.

In 1924, arsenic was found in 5 dogs and 2 fowl; and the following year, arsenic and Paris green were found in a calf and cow, respectively, and strychnine in a fox.

In 1926, strychnine was found in 2 dogs and a fox, and in 1927, there was 1 case of a dog poisoned with barium.

From 1928 to 1931, only the total number of samples examined was reported. The 1932 report mentions a case where several cows had died of supposed lead arsenate poisoning but where deadly nightshade was the lethal agent. This report goes on to state that "the experience of several years past leads us to believe that quite frequently poisonous plants upon which animals have browsed in pastures are responsible. Deadly nightshade, sheep laurel, and water hemlock are not uncommon in this region and all are poisonous plants." The belief of Dr. Bailey that the farmers of Connecticut should be taught to recognize the hazards of poisonous plants on their farms led to the publication by the Station in 1943 of a circular describing the common poisonous plants[1] that was in considerable demand until the issue was exhausted.

In 1933, the first case of nicotine poisoning (in a cow) was reported; that same year, arsenic

[1]Shepard, C. E.; Bailey, E. M.; Walden, D. C.: Notes on Livestock Poisoning in Connecticut. Connecticut Agric. Exper. Sta. Bull. 470, 1943.

TABLE 1—Toxicologic Examinations, 1936-1949

Year	Number of Samples: Total	Lead arsenate	Other arsenicals	Lead	Zinc	Phosphorus	Cyanide	Thallium	Strychnine	Plant poisons	Other poisons	Total containing poison	Per cent containing poison	Remarks
1936	97	7	2	5	....	3	....	....	5	....	2	24	25	Mercury 2.
1937	70	....	2	2	....	2	....	....	4	1	4	15	21	Paris green 1, mercuric chloride 1, hellebore 1, nitrate 2, phenol 1.
1938	86	....	*	*	....	*	....	....	....	....	....	31	35	Lead, arsenic, phosphorus, mercury, antimony, nitrate, fluoride reported found, but No. of samples not segregated.
1939	89	12	1	13	1	....	1	4	5	1	5	40	45	Copper 2, NaCl 2, barium 1.
1940	73	10	....	4	....	....	....	....	....	2	5	21	29	Copper 2, antimony 3, water hemlock 1, laurel 1.
1941	86	1	*	12	....	....	2	....	*	2	17	34	40	Aconitine 1, hellebore 1.
1942	61	1	....	7	....	2	4	....	3	....	....	17	28	
1943	73	3	....	6	....	2	2	....	5	3	5	25	34	Copper 4, solanine 1, hellebore 2.
1944	109	6	16	6	....	1	5	....	1	....	....	37	34	Paris green 1, nitrate 1.
1945	96	4	2	9	....	1	2	....	4	1	1	23	24	One sample contained both phosphorus and strychnine; kerosene 1, yew 1.
1946	99	....	6	15	1	....	2	1	2	....	7	34	34	Barium 2, antimony 6, cadmium 1.
1947	139	1	5	35	8	....	....	....	2	....	16	67	48	Ag 2, Ba 2, Bi 1, Cd 2, Hg 1, Sb 2, DDT 4, mineral oil 1, nitrate 1.
1948	134	3	5	23	14	....	1	1	4	....	10	61	46	Ag, Hg, and Zn 1, Ba 1, Cr 1, Sb 1, DDT 6.
1949	175	5	1	25	27	1	....	1	....	....	22	82	47	Ag, Cr, Hg, Pb, and Zn 1, Ba 1, Be 3, Hg 1, Sb 6, DDT 2, ANTU 7, phenobarbital 1.
Total for 14 years	1,387	53	40	159	51	12	19	7	35	10	94	511	....	
Average	99	4	3	12	4	1	1	0.5	3	0.7	7	37	37	

*Number not listed.

was found in 1 cow and a sample of milk contained 0.36 Gm. per quart of hydrocyanic acid. The following year, I found potassium cyanide in some coffee that a husband intended for his wife; this incident is firmly fixed in my mind because I started to taste the coffee before testing it and refrained at the last minute, for what reason I know not.

I have tabulated the results of the examinations from 1956 to 1949 (table 1). The average number of samples per year during the fourteen years was 99, but a 50 per cent increase has taken place during the last three years. The most common poisons, in their order of predominance, were lead, arsenate of lead, zinc, other arsenicals, strychnine, cyanide, and phosphorus. There were more than three times as many cases of poisoning from lead as from any other poison.

A few cases deserve individual mention. In 1938, a dog food supplement, supposed to be calcium phosphate was found to be 80 per cent sodium fluoride. In 1945, the death of a dog was caused by its being given a bath with a flea preparation known as "tick-tox" whose active ingredient was an organic thiocyanate of the lethane type. The organic thiocyanate had become decomposed, and the tick-tox contained what proved to be a lethal dose of inorganic cyanide. In another dog, not only was strychnine found but also blue-dyed hemp seeds, thus proving unequivocally that the source of the strychnine was the mole killer known as "mole-nots." In 1947, the livers of 2 calves were found to contain 10 and 200 p.p.m., respectively, of silver; where the silver came from we do not know. A sample of salted hay submitted that same year by a farmer to find out why his cows refused to eat it was found to have been "salted" with arsenate of lead instead of sodium chloride; the hay contained about 1,500 p.p.m. of lead arsenate. Those cows were wiser than their owner.

Cases of poisoning by the postwar organic compounds have begun to appear, but so far in relatively small number. Evidence that a cow had been poisoned by DDT was found in 1947; 6 birds were proved to have been killed by this poison in 1948 and 2 more in 1949. It is believed that the birds, mostly robins, consumed the DDT by eating worms from lawns that had been sprayed to control the Japanese beetle. In 1949, 7 dogs died from poisoning by the new

rodenticide *alpha* naphthyl thiourea, or ANTU.

The type of poison is frequently an indication of its source. The presence of both lead and arsenic indicates an insecticide, while arsenic alone suggests an arsenical weed killer such as "herbicide" or an ant poison; and lead without arsenic (particularly in the presence of zinc or of zinc and barium) points to paint as the source. Strychnine probably comes either from a poisoned bait or a rodent poison; the most common sources of thallium are rat pastes and ant poisons. The only legitimate uses of ANTU and 1080 are as rat poisons. The finding of barium in the absence of other heavy metals may also point to a rodenticide containing barium carbonate. Some ant poisons contain antimony, but the most common source of the antimony found in autopsy samples is the tartar emetic administered by the veterinarian. Yellow phosphorus, borax, and sodium fluoride are all constituents of roach pastes.

Some materials may be considered poisonous only to certain types of animals. Salt is a hazard only to poultry; much over 1 per cent in the feed may be harmful to young chicks. Copper is not usually considered to be a very poisonous element, but excesses of copper are said to be poisonous to sheep.[2]

The work of our laboratory in testing samples for poisons was facilitated enormously in 1946 by our acquisition of a spectrograph. With this instrument, it is possible in a few minutes to examine a sample for *all* metals, both poisonous and nonpoisonous, and to establish beyond question just what metals are present. Furthermore, the spectrographic film is a permanent record of the examination that can be consulted at any time thereafter. The saving in time over chemical methods has been enormous, and the spectograph has the additional advantage that unusual poisonous metals will not be overlooked—as they easily might be in a chemical analysis, due to neglect to make specific tests for them. An example of this is our finding of silver in one or two samples.

The use of other new physical instruments such as the visible and ultraviolet spectrophotometer and the infrared spectrograph is beginning to find a place in toxicologic analysis. These instruments offer possibilities of identifying organic drugs, alkaloids, etc., with greater rapidity than is possible by traditional chemical methods, and often with greater certainty. This is particularly true of the infrared spectrograph, which can identify any organic compound, once it is isolated, with absolute certainty.

It is probably unnecessary, in addressing an audience of veterinarians, to tell you what we sometimes have to tell animal owners who come directly to us: namely, that the Station can not accept intact animals for examination but expects to have the dissection made by a veterinarian. Neither do we pretend to be pathologists; we only test for poisons. In cases where an additional pathologic examination is required or advised, we refer owners to the Department of Animal Diseases at Storrs; not infrequently, in fact, veterinarians submit their specimens to Dr. E. Jungherr at Storrs for his examination and he, in turn, submits the material to us to be tested for poisons.

Toxicologic examinations have always been a particularly time-consuming and sometimes difficult part of the work of the analytical chemistry department, but we will feel it has been a rewarding one if we can know that the service has been of real value to Connecticut farmers and veterinarians.

[2]U. S. Department of Agriculture: Yearbook of Agriculture. U. S. Government Printing Office, Washington, D. C., (1942): 336.

Low Level Phenothiazine Treatment

Phenothiazine treatment continuously at low levels for intestinal parasites in colts is believed to be more efficient than the usual intermittent therapy, according to Todd, *et al.*, in *Bulletin 545*, Kentucky Agricultural Experiment Station (April, 1950). No adverse effects of the two methods of treatments were noted.

The low level phenothiazine therapy (2 Gm. daily) was considered most efficient in reducing both the number of parasites and eggs passed by infected horses: It reduced the number of eggs passed, the fertility of the eggs, and exerted no adverse effect.

Recent Advances in Virus Diseases

ZAKI MORCOS, F.R.C.V.S., M.V.Sc., D.V.H.

Cairo, Egypt

VIRUSES CAUSING disease are parasitic, minute microörganisms capable of multiplication within living cells of the invaded host. Because most viruses can only multiply within the living cell, attention is directed to inoculation of living experimental animals or chicken embryos.

As to the entry of a virus into cells suitable for its multiplication, Hirst discovered the means of interaction of influenza virus and the cell surface (hemagglutination reaction); that is, influenza virus will agglutinate red cells of many species. The virus is first adsorbed to the cell surfaces by forming bridges, and then these cells are deposited in granular masses. When the red cells and the virus are kept at 37 C., with intermittent shaking, the result is elution of the virus—the red cells cease to be agglutinated while the fluid containing the virus is capable of agglutinating fresh red cells. This indicates that during shaking, the virus has been attached to receptors. In effect, the virus is detached and the cells are desensitized, a phenomenon explainable under Ehrlich's theory—resistant cells as receptor and virus as antitoxin with susceptible cells allowing entrance of virus, undergoing granular division phases developing into multiple viruses, causing breaking down of cells to permit escape of the viruses to invade fresh susceptible cells and to cause infection.

Fenner studied infection of mice in mouse pox and learned that not only is mouse pox serologically similar to variola but mice were protected against mouse pox with vaccinia just as effectively as human beings are protected against smallpox.

Fenner found that the primary infection in mouse pox takes place via trauma of the skin. Multiplication of virus at entrance gives rise to macroscopic lesions. However, prior to appearance of lesions, dissemination via regional lymphatics and blood vessels begins and produces a primary viremia and infected liver and spleen cells. When multiplication in such organs reaches its maximum, secondary viremia produces a secondary skin and mucous membrane rash. An excess of antivirus is formed and virus is no longer detectable in internal organs and blood. Clinical recovery follows, unless the initial infection was too severe. Symptoms are caused mainly by soluble products from the degenerating cells, as compared with bacterial toxins which are produced by bacteria and leak out on degeneration of the cells.

Recent information (Rivers) concerning the viruses has dissipated much of the mystery and misunderstanding—their size, shape, density, autonomous activity, reaction to chemicals and physical agents, antigenic structures, use as soluble antigens, transmission from host to host, vaccine production, immunity, and others.

The more we know about a virus infection, the more rapid is the progress in combating and controlling it.

In recent years, many techniques have been introduced for the study of viruses and virus diseases. These involve chicken embryo cultivation, adaptation, electron microscopy, immunity and immunization procedures, serology and serologic reactions.

TECHNIQUES USED IN STUDY OF VIRUSES

Cultivation of Viruses in the Chicken Embryo.—Results obtained by cultivation of viruses in the developing chicken embryo proved superior to, and less expensive than, the previous tissue-culture methods. No sterilization is required, the method is more convenient than animal inoculation, and latent viruses can be eliminated. Although many viruses have been grown successfully in the developing chicken embryo, others have not yet been adapted to such growth.

Maximum virus production in particular cells, estimated by titration into susceptible animals, has been studied.

Viruses already cultivated can be classified as follows:

1) Those which produce microscopic pock le-

Dr. Morcos is located at the Cairo Veterinary College, Giza.

sions: vaccinia (Goodpasture, *et al.*), variola (Torres, Teixeira), fowlpox (Woodruff, Goodpasture), cowpox (Dowine), sheep pox (Gins, Kurnet), infectious ectromelia of mice (Paschen), herpes simples (Saddington, Anderson), pseudorabies (Mesrobeanu), psittacosis (Fortner).

2) Those which multiply in the chorio-allantoic membrane but do not produce specific pock lesions: cattle plague (Shope, *et al.*), canine distemper (Haig, Cabasso, Cox), lymphocytic choriomeningitis (Bengtson, Wooley).

3) Those which grow in the allantoic cavity: Newcastle disease and fowl plague (Burnet, Ferrey).

4) Those which grow in the amnionic cavity: influenza (Bengtson, Wooley).

5) Those which grow in the embryo with a lethal effect: fowl plague.

6) Those which grow in the embryo without apparent lesions: yellow fever (Elmendorf, Smith).

7) Those which grow in the brain and central nervous system of the embryo: rabies (Kligler, Bernkopf).

8) Those which grow in the yolk sac: cattle plague.

Adaptation.—Under this heading come the most interesting and important experiments with such viruses as:

1) Cattle plague and its adaptation to goats (Edwards), rabbits (Baker), and chicken embryos. The result of this adaptation resulted in the production of natural, attenuated strains capable of immunizing cattle.

2) Fowl plague subdurally into white mice (Morcos, 1946).

3) Swine fever subdurally into rabbits (Morcos 1948).

4) South African horse sickness and its adaptation in mice and the production of the valuable neurotropic strains.

5) Newcastle disease and its adaptation to the chicken embryo to produce a vaccine of superior quality economically. One egg can produce enough virus to immunize 4,000 to 6,000 fowl.

6) Green distemperoid and the Lederle strain of distemper (Cabasso, Cox).

7) Hemotropic debilitating infection of guinea pigs.

The Application of the Electron Microscope.—This is one of the most useful physical aids in the study of viruses (Zworykin, *et al.*), since it makes available micrographs of many viruses. The improvement in the pictures of viruses taken by means of the electron microscope during the past ten years provides striking testimony to the advances that have been made in the microscope itself and in the techniques involved in its use (Stanley, Lauffer).

The electron microscope has been used to obtain pictures of protein molecules (Stanley, Anderson) and to study the reaction between viruses and their antiserums (Anderson, Stanley).

The possibility of using the electron microscope as a diagnostic aid is greatly enhanced by perfection of a technique which produces very thin tissue slices suitable for direct examination under this instrument (Fullam, Gessler).

Immunization Against Viral Infections.—Different methods of immunization have been practiced during recent years to check the terrific economic losses in animal production as the result of outbreaks of virus diseases in many parts of the world. For example, Egypt has had South African horse sickness, cattle plague, and an enzoötic of fowl plague and Newcastle disease (Daubney, Mansi). Foot-and-mouth disease, although it is enzoötic in the country, has commanded the attention of virus research workers because of its sudden severity and the economic losses which resulted when the animals were unable to perform their duties on the farm. Other viral diseases of importance are rabies, canine distemper, fowlpox, sheep pox, strangles in horses, swine influenza, and swine fever (hog cholera).

The superiority of natural attenuated virus vaccine in immunization is always evident in countries where the disease is enzoötic, e.g., the application of the attenuated Newcastle disease virus (Mukteswar strain) in Egypt. This virus vaccine is less valuable in a country like Great Britain where the disease spreads less rapidly, because it interferes with the hemagglutination-inhibition test. In this case, the crystal violet-killed vaccine virus is more significant (Doyle), but such vaccine will not confer a lasting immunity as will the living virus.

In other instances, where a natural attenuated virus is not yet available (fowl plague), many methods are used for attenuation of the virus—adsorbing on aluminum gel or preparing it in a water-in-oil vaccine (Daubney, *et al.*), to produce vaccines of higher quality.

The aluminum gel adsorbant vaccine virus has been successfully used in combating foot-and-mouth disease in Denmark and other European countries (Schmidt).

When the foot-and-mouth disease virus was irradiated with ultraviolet rays (ultra-short waves) under suitable experimental conditions, it passed into a noninfective modification (anavirus) possessing pronounced immunizing properties. When adsorbates were prepared from virus samples so treated, the vaccines exerted a more powerful antigenic effect and produced an immunity of longer duration than anavirus alone (Schmidt, *et al.*).

Preparation of adsorbate distemper vaccine has been reported (Goret), but as with other distemper vaccines (Laidlaw, Dunkin) and the distemper virus naturally attenuated by passage in ferrets (Green) or the vaccine prepared by Mansi, it is not satisfactory owing to the plurality of canine distemper as expressed by many workers (Michelson, Carlstrom, Nilsson).

In a recent article (Martin, Goret), canine distemper was reported transmitted in a serial passage

in rabbits, thus obtaining a lapinized virus. To date, this is not known to have been confirmed by any other worker.

There are many other methods of vaccine preparation in viral infections, each depending on certain conditions—susceptibility of the species or breed, pregnancy, the possibility of inducing abortion, and others.

Serologic Reactions in Viral Infections.—As a means of a virus infection, neutralization and complement-fixation tests have been adapted from bacterial investigations after they have been modified according to each virus infection. Many methods of application of the same test have been investigated, because no single neutralization technique is satisfactory for all the viral agents.

Neutralization tests are always costly in time and materials, and frequently they are difficult to interpret (Smadel, Rivers). The neutralization test used in the world-wide surveys on yellow fever is an example of such an adaptation of the principles to a specific purpose (Bugher). Many workers have studied the neutralization phenomenon in relation to neurotropic viruses and certain methods have been devised which are suitable for routine diagnostic purposes (Olitsky, Casals, Mammon).

Complement-fixation tests have been used in progressively wider fields during recent years. Preparation of a pure viral antigen suitable for this test still presents the greatest problem. Many methods for the preparation of antigens have been described independently. The group of neurotropic viruses, using tissue extracts as antigens, have been discussed widely and most of the defects of preparing brain antigens have been overcome (Craigie, Tulloch, Howitt, Casals).

Hemagglutination, Hirst's phenomenon, has been useful in investigative and diagnostic work. It has been used in the diagnosis of influenza (Hirst, McClelland, Hare), vaccinia (Nagler), variola (North), mumps (Levens, Enders, Burnet), Newcastle disease (Hirst, Burnet), fowl plague (Hirst), swine influenza, and others.

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Autohemotransfusion Following Massive Internal Hemorrhage in a Dog

SEYMOUR R. ROBERTS, D.V.M.

Richmond, California

The patient, a male 1-year-old Beagle Hound, was admitted to the hospital after an emergency call.

The history revealed that the animal had been in good health and spirits when the owners left the house in the morning. Upon their return, they had noticed a progressive weakness, which became so severe that the dog was unable to stand unassisted when first examined. The patient was in considerable shock. The visible mucosae were pale and the pupils dilated. The pulse was 180, respiration 45, and temperature 102 F. The red cell count was 2,225,000 and hemoglobin 70 per cent Talqvist. The abdomen was enlarged.

By this time, some ninety minutes after admission, the patient was noticeably weaker. An experimental abdominal puncture revealed free blood in the abdomen and a diagnosis of internal hemorrhage was made. About 300 cc. of blood was aspirated from the abdomen and collected in a Baxter transfusovac in a sterile manner. The blood was transfused in the usual manner, except that it was necessary to incise the skin to expose a vein in order to insert the needle. After administration of the blood, the patient showed a prompt improvement and was able to walk about without weakness thirty minutes after the transfusion. A large amount of brain tissue rabies vaccine was injected into the abdomen. The patient's color was improved, the pulse and respiration approached normal, and the abdomen was considerably smaller. However, within one hour after the transfusion, symptoms of shock were again apparent and the abdomen was rapidly filling. Again, 350 cc. of blood was removed in the same manner as before, but it was not possible to raise a vein at this time. It was decided to attempt a laparotomy in spite of the poor prognosis. The patient was prepared in the usual manner, and ether anesthesia was employed. A considerable amount of free blood was found on opening the abdomen. A hematoma 4½ in. long was found, involving the left renal area. The mass was freed from its vertebral attachments by gentle manipulation and a bleeding vessel was exposed. The patient expired at this time.

Postmortem examination revealed hemorrhage from the left renal artery. Blood had passed retroperitoneally to the opposite renal area and into the serosa of the bladder and rectum. Blood had also passed into the mesentery and small intestine, dissecting between the reflections of the visceral peritoneum.

The cause for this unusual internal hemorrhage is conjectural. It is presumed that the patient fell or otherwise injured himself during the latter part of the day. The injury had ruptured the renal artery and caused the attendant symptoms.

The lowered red cell count is explained on the basis of the known physiologic reaction to hemorrhage. The body attempts to replace blood volume through transfer of tissue fluids to the general circulation, resulting in a lowered per unit cell count.

Conclusion.—Great improvement followed the administration of blood collected from the patient. Where hemorrhage is massive and the blood is collectible, autohemotransfusion is a practical therapeutic measure.

From the Richmond Veterinary Hospital, Richmond, Calif.

Public Health Reports (June 30, 1950) has announced the isolation of a new Salmonella type, *Salmonella duval*, from the intestinal tracts of normal dogs.

Aureomycin Disappointing in Staphylococcic Mastitis.—Aureomycin has given disappointing results in the treatment of staphylococcic mastitis at the University of California. According to Dr. O. W. Schalm, doses four times the prescribed amount effected cures in only 33 per cent of the infected cows.

An Outbreak of Cattle Influenza in Japan in the Fall of 1949

KOGI SAITO, D.V.M.

Tokyo, Japan

FROM JULY to December, 1949, an outbreak of cattle influenza was observed in the western and middle part of Japan.* In order to determine the etiology of this disease, experimental work and an epizoötiologic survey were initiated by the Animal Hygiene Section of the Ministry of Agriculture and Forestry. This report consists of an outline of the work done thus far.

INCIDENCE IN THE PAST

Major outbreaks of cattle influenza were seen in August and September of 1889 and in September of 1893, while minor ones were experienced in 1914, 1915, and 1916. There may have been additional minor outbreaks which were not identified.

In Korea, the disease was observed in 1921, and in 1929, an epizoötic spread through the entire country, involving 250,000 (about 16%) of the 1,570,000 cattle. Exact details concerning these epizoötics are no longer available.

It is believed that all of the cattle in the northwestern part of Tokyo City were affected in the outbreak from November, 1914, to early July, 1915. The fatality was remarkably high in newborn calves, and low in the adult cattle. Some of the infected cows gave birth to diseased calves. At that time, the disease was believed to be caused by a virus which attacked the digestive tract primarily. However, in 1922, Dr. Futamura *et al.* isolated a bacillus belonging to the Pasteurella group and believed it to be the cause of the disease.

The 1929 outbreak in Korea was mild, with a mortality of 0.2 per cent. Only 1,300 cattle, of 250,000 infected with the disease, died. The cause of this outbreak was believed to be a virus, but it could not be isolated.

Although we can not state positively that the above mentioned outbreaks were all caused by the same agent, it seems logical to assume that this is the case. The epizoötic of 1949 as well as the disease which has prevailed for the last three years in the northern part of the Kyushu region are also apparently caused by the same agent.

TABLE I—Summarized Report of Incidence and Morbidity of Cattle Influenza by Prefectures in 1949

Prefecture	Cattle (No.)*	Incidence	Morbidity (%)	Loss	Figures showing prefectures in fig. 1
Hokkaido	52,953	0	....	....	....
Aomori	11,131	0	....	....	45
Iwate	29,398	0	....	....	44
Miyagi	38,353	0	....	....	43
Akita	17,146	0	....	....	42
Yamagata	41,025	0	....	....	41
Fukushima	35,927	0	....	....	40
Ibaraki	56,462	0	....	....	39
Tochigi	21,861	0	....	....	38
Gumma	46,086	0	....	....	37
Saitama	43,391	0	....	....	36
Chiba	67,851	0	....	....	35
Tokyo	12,152	0	....	....	34
Kanagawa	30,430	0	....	....	33
Niigata	66,408	0	....	....	32
Toyama	8,791	0	....	....	31
Ishikawa	21,089	0	....	....	30
Fukui	11,431	430	3.9	4	29
Yamanashi	10,147	0	....	....	28
Nagano	44,803	0	....	....	27
Gifu	36,383	39	0.1	0	26
Shizuoka	47,060	0	....	....	25
Aichi	46,026	0	....	....	24
Mie	54,303	599	1.1	2	23
Shiga	29,091	1,919	6.6	19	22
Kyoto	40,324	1,845	4.6	28	21
Osaka	37,676	5,561	14.8	88	20
Hyogo	125,376	16,456	13.1	135	19
Nara	24,314	1,505	6.2	16	18
Wakayama	39,770	4,080	10.3	60	17
Tottori	49,350	2	0.0	0	16
Shimane	66,241	228	0.3	1	15
Okayama	106,694	2,540	2.4	17	14
Hiroshima	105,951	4,468	4.2	40	13
Yamaguchi	78,064	862	1.1	1	12
Tokushima	49,522	1,184	2.4	2	11
Kagawa	53,286	3,683	6.9	9	10
Ehime	66,586	4,125	6.2	25	9
Kochi	39,326	1,134	2.9	6	8
Fukuoka	73,416	3,578	4.9	18	7
Saga	37,940	3,607	9.5	19	6
Nagasaki	81,132	43,350	53.4	56	5
Kumamoto	83,176	5,244	6.3	85	4
Oita	80,583	3,044	3.8	23	3
Miyazaki	56,942	17,829	31.3	59	2
Kagoshima	117,987	34,635	29.4	169	1
Total	2,293,350	161,967	....	835	....

*As of Feb. 1, 1949.

Dr. Saito is chief of the Animal Hygiene Section, Livestock Bureau, Ministry of Agriculture and Forestry, Tokyo.

*During the fall of 1950, there was an outbreak of bovine influenza involving 460,000 cattle with a mortality of more than 5,000.

OUTBREAK IN 1949

The first outbreak occurred early in

July on Amakusa Island of Kumamoto Prefecture; the next was at Sasebo in Nagasaki Prefecture at the end of the same month. Before the middle of September, the disease had spread throughout Nagasaki Prefecture and all the prefectures in the Kyushu region. In September, the incidence reached its highest peak in the region and spread to Hiroshima, Hyogo, and Shiga prefectures. By the middle of October, the disease was reported in all prefectures with Fukui, Gifu, and Mie prefectures as their eastern border. In the Kyushu region, after the middle of October, the morbidity began to decline, and almost ended in early December. In other regions attacked later, the peak occurred early in November and declined by the end of December. It appears that the peak was observed one and a half months after its initial appearance and ended three months later.

Generally speaking, the epizoötic was more severe in the plain or rice field area

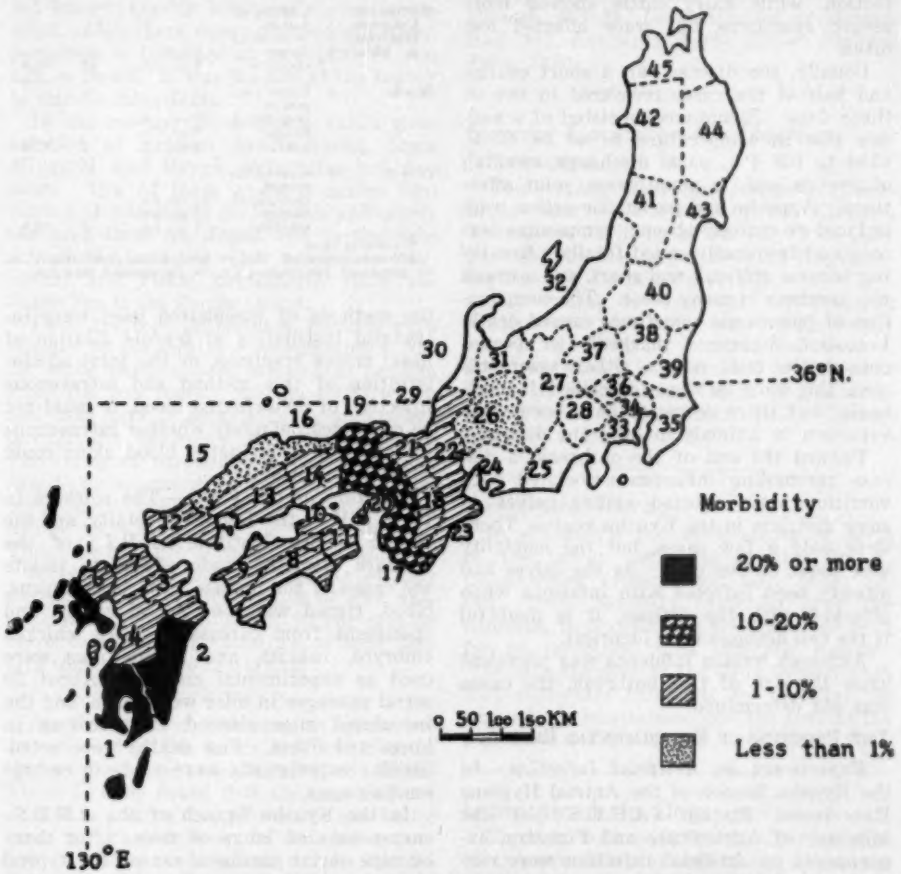

Fig. 1—Degree of diffusion of cattle influenza by prefectures, 1949.

1. Kagoshima	8. Kochi	15. Shimane	22. Shiga	29. Fukui	36. Saitama	43. Miyagi
2. Miyazaki	9. Ehime	16. Tottori	23. Mie	30. Ishikawa	37. Gumma	44. Iwate
3. Oita	10. Kagawa	17. Wakayama	24. Aichi	31. Toyama	38. Tochigi	45. Aomori
4. Kumamoto	11. Tokushima	18. Nara	25. Shizuoka	32. Niigata	39. Ibaraki	Hokkaido
5. Nagasaki	12. Yamaguchi	19. Hyogo	26. Gifu	33. Kanagawa	40. Fukushima	
6. Saga	13. Hiroshima	20. Osaka	27. Nagano	34. Tokyo	41. Yamagata	
7. Fukuoka	14. Okayama	21. Kyoto	28. Yamanashi	35. Chiba	42. Akita	

where traffic was heavy than in the less travelled mountain district. In Hyogo Prefecture, for example, the outbreak did not extend to the coastal district along the Japan Sea.

About 800 of 160,000 infected cattle died or were slaughtered. The mortality was about 0.5 per cent.

Accurate figures are not available for the morbidity, but in some districts adult cattle, especially those of indigenous or Korean breed, showed a higher rate of infection, while dairy cattle showed more severe symptoms but were affected less often.

Usually, the disease ran a short course, and half of the cases recovered in two or three days. Symptoms consisted of a sudden rise in temperature to 40 to 42 C. (104 to 108 F.), nasal discharge, swelling of eyelids and, in some cases, joint affections. Appetite and peristaltic action were reduced or entirely absent; tympanites was seen and frequently ended fatally. Breathing became difficult and short, and a cough was common in many cases. The complication of pneumonia sometimes caused death. Lactation decreased markedly or ceased entirely in milk cows. Other symptoms were the same as those described in textbooks, but there seems to have been some variation in animals in different districts.

Toward the end of the outbreak, a disease resembling influenza associated with vomiting was reported among calves in some districts in the Kyushu region. There were only a few cases, but the mortality was about 80 per cent. As the calves had already been infected with influenza when attacked with the disease, it is doubtful if the two diseases were identical.

Although human influenza was prevalent after the end of this outbreak, the cause was not determined.

THE PROGRESS OF EXPERIMENTAL RESEARCH

Experiment on Artificial Infection.—In the Kyushu branch of the Animal Hygiene Experiment Station (A.H.E.S.) of the Ministry of Agriculture and Forestry, experiments on artificial infection were carried out as follows: 11 calves were inoculated with nasal discharge or defibrinated blood collected from the diseased animals in Kagoshima and Nagasaki prefectures. Except in 2 cases, typical symptoms appeared after an inoculation period of two to six days, with an average of three to three and one half days.

General symptoms were the same as those of naturally occurring cases. Since

TABLE 2—Infection in Cattle with Suspensions from Inoculated Mice

Strain	Inoculation: Passage	Material*	Method	Symptoms: Incub. period (days)	Body temp. (C.)
Nakamura	3	Filtrate of Ringer emulsion	2 cc. i.t.	5	40.0
Mixture of Uchiyama, Nagasaki, & Ishiki	3, 5, 5	Upper clear part of centrifuged Ringer emulsion	5 cc. i.n.	12	40.8
Maeda	9	Upper clear part of centrifuged Ringer emulsion	7 cc. i.v. 5 cc. i.n. 3 cc. i.t.	8	42.0
C-48-47	9	Upper clear part of centrifuged Ringer emulsion	10 cc. i.v. 5 cc. i.n. 5 cc. i.t.	8	39.8

*Lesion in lung.
Abbreviations used: i.t. = intratracheal instillation; i.n. = intranasal instillation; i.v. = intravenous injection.

the methods of inoculation used were intranasal instillation of tenfold dilution of nasal mucus specimen, or the joint administration of this method and intravenous injection of defibrinated blood, it could not be concluded definitely whether intravenous injection of defibrinated blood alone could cause the disease.

Isolation of the Virus.—The workers in the A.H.E.S., the Tokyo University, and the Public Health Institute (P.H.I.) of the Welfare Ministry made efforts to isolate the cause of the disease from nasal mucus, blood, rinsed water of buccal cavity, and specimens from carcasses. Mice, chicken embryos, rabbits, and guinea pigs were used as experimental animals. About 20 serial passages in mice were made, and the inoculated mice showed some lesions in lungs and livers. Few deaths were noted. Similar experiments were made in embryonating eggs.

In the Kyushu branch of the A.H.E.S., suspensions of lungs of mice, after three or nine serial passages, caused the typical symptoms of influenza in calves following intratracheal inoculation. As those symptoms were transient, it was difficult to conclude that infection had occurred when the many factors that affect cases are taken into consideration.

In the Chugoku branch of the A.H.E.S., studies made on the presence of organisms in the nasal mucosa of 61 cases showed no specific type.

Hirst's hemagglutination tests made at the A.H.E.S. and the P.H.I. yielded no decisive data.

ETIOLOGIC SURVEY

It was stated that the number of infected cattle was about 160,000, but this figure represents reported cases only, and it is not known exactly how many cases there were. Also, there were no exact data which pertained to influence on morbidity of sex, age, or breed. It was the aim of the survey to clarify these facts.

In the survey, about 10,000 cattle were sampled at random in Nagasaki, Saga, Miyazaki, and Hyogo prefectures and two zones. One of these zones is across Shimane and Hiroshima prefectures and covers the area from the Japan Sea to the Seto Inland Sea, and the other crosses on Mie, Shiga, and Fukui prefectures from the Japan Sea to the Pacific Ocean.

From the four prefectures, hamlets were selected by the stratified subsampling method, while villages were sampled at random from the two zones. All the cattle which had been kept in these villages or hamlets during the outbreak were investigated. The items of investigation were sex, age, breed, management, nutrition, work, circumstances, anamnesis, and the environmental conditions of the sick animals. Those items were recorded on cards.

It is expected that the results of this survey will show the number of sick animals with the reliability of 90 per cent or more, and permit an analysis of some factors that pertain to morbidity.

SUMMARY

An outbreak of influenza in cattle occurred during the latter half of 1949 in the western and middle part of Japan. There is little doubt that the cause of the disease is a virus, and efforts are now being made for its isolation. In addition, a survey has been made of all of the factors that pertain to this outbreak and it is expected that the final analysis will yield interesting results.

Proper ventilation of mink pens helps to reduce losses from heat exhaustion.

Wobbles in Colts

The ailment of horses which is commonly referred to as wobbles is characterized by irregularity in the gait of an ataxic bilateral incoördination of the hind legs. At present, symptoms must be accepted as the one means of diagnosis. The condition develops so slowly that it may be present for some time before a less observing owner or caretaker notices an abnormality. At present, two possible causes must be considered—nutrition and heredity.—*W. W. Dimock, D.V.M., Incoördination of Horses, Bull. 553, Kentucky Agric. Exper. Station, June, 1950.*

Summer Course on the Electron Microscope

The summer laboratory course in "Techniques and Applications of the Electron Microscope" will be given July 9 to July 21, 1951, by the Department of Engineering Physics, Cornell University.

The course is designed for research workers who plan to, or who have recently entered the field of electron microscopy. Inquiries should be addressed to Professor Benj. M. Siegal, Department of Engineering Physics, Rockefeller Hall, Cornell University, Ithaca, N.Y.

Antibiotic Therapy

In discussing the applications of some of the newer antibiotic agents, Dr. R. Cruickshank (*Proc. Roy. Soc. Med., 43*, Oct., 1950: 759-762) concludes that the clinician, in deciding on the choice of drug for an infection, must carefully consider "the effectiveness of the drug to deal with that particular infection, its toxicity, the ease of administration, and the cost to the patient or the community."

Leptospirosis in Dogs

There is little need for an alarmist view of the possibility of dog-to-man transmission of infection of leptospirosis, says J. O. Joshua, Finchley, England (*Brit. Vet. J.*, Sept., 1950: 321-347). However, so long as there is a possibility of such transmission, the disease remains a public health problem.

Wall's Liver Biopsy for Horses

AXEL ISAKSSON

Stockholm, Sweden

LIVER BIOPSY in horses has been used on a large scale as a diagnostic auxiliary for fifteen years in the northern parts of Sweden in suspected cases of infectious anemia. To a certain extent, liver biopsy has also been practiced at the Veterinary College of Stockholm and at the State Veterinary Medical Institute in order to prove or exclude morbid liver changes of different kinds. Experience from these operations shows that the test usually is simple to perform and only seldom causes complications in the operated horses. Liver biopsy is, therefore, worth being incorporated with the diagnostic arsenal also outside the boundaries of Sweden.

The original instruments were constructed by Wall, who also gave the first instructions for the test. Later, the instruments were improved by Jonsson. The instruments now used are shown in figure 1. They are: harpoon, perforator, hammer, and a metal case with spring fasteners. The harpoon consists of a tube (square in cross section) with a handle, stop-shield, and knife tracks; a knife; and a mandrel. The lower part of the tube is sharpened to form two angle-shaped points. In the upper part of the tube there is a large button-shaped handle of nickel-plated metal in which runs a canal of the same size as in the harpoon tube. On the harpoon tube, there is a stop-shield that is movable along the tube. By a screw, this shield can be fixed at suitable positions on the upper third of the tube. Here, a row of grooves fits the point of the screw. Along one side of the harpoon tube are tracks for the knife. The knife, made of nickel-plated band steel and very elastic, is bent almost to a right angle in its lower part, the short side of which forms the cutting part of the knife. The upper part of the knife has a small handle. When the knife is fully inserted in the track, the cutting edge reaches, by a transverse slit, to the opposite long side of the harpoon tube just above its lower end. When the knife is pulled up as far as possible, with regard to the handle of the tube, the lower part of the knife is completely straightened between the tracks of the harpoon tube. The dimensions of the mandrel fit the harpoon tube and its handle well. When it is inserted, the mandrel is long enough to reach about 1 cm. beyond the points of the tube. In the upper part, the mandrel is finished off with a knob.

The perforator has a dagger-like edge and a grooved handle. It is made of nickel-plated steel. The bottom of the metal handle contains a ball of lead.

The case, a nickel-plated metal container with a tightly fitting cover on hinges, contains a plate, also of nickel-plated metal, with spring holders for fastening the instruments. The case holds the instruments when dry, and when filled with disinfecting solution, it is used to transport the sterilized instruments to the places for operation.

TECHNIQUE

The following technique for taking samples is used. The margin of the lung is percussed via the fourth intercostal space from behind on the right side. It is marked by two cuts in the hair, one about 2 cm. in front of the intercostal space, the other about 2 cm. behind it. A spot, the size of one's palm, around the cutting line between the pulmonary margin and the mentioned intercostal space, is cut free from hair with the aid of a pair of curved scissors. The scissors are held against the direction of the hair. Another percussion is made, and the pulmonary margin is marked as carefully as possible by new cuts. The field of operation and the surrounding coat is thoroughly wiped with slightly damp cotton, so that loose hair, dust, etc., are removed or cling to the skin. The field of operation is bathed with a suitable disinfectant. According to the horse's temperament, it is held in check by an assistant; left front leg lifted up, or not, with or without hobbles.

The perforator is placed against the skin at the fourth intercostal space from behind, about 1 to 2 cm. above the pulmonary mar-

Dr. Isaksson is veterinary pathologist at the State Veterinary Medical Institute, Stockholm.

gin in front of the front edge of the last rib (notice that vessels and nerves pass immediately *behind* the ribs). The edge of the perforator is held in the longitudinal direction of the intercostal space. As soon as the perforator is fixed, the wall of the chest is perforated by a hard blow with the hammer. Most horses react very little, provided that the edge of the perforator is really sharp. The length of the perforator should be fitted, so that the perforator goes through the chest wall of lean horses, but without injuring the lung. The hemorrhage from the incision is almost always very slight. If the wall of the chest has been fully perforated, a whizzing sound is usually heard from the opening because of air getting into the pleural sac. That is of no importance, however, for completing the operation. Nor does it have any influence on the well-being of the horse, provided that the operation does not take too long.

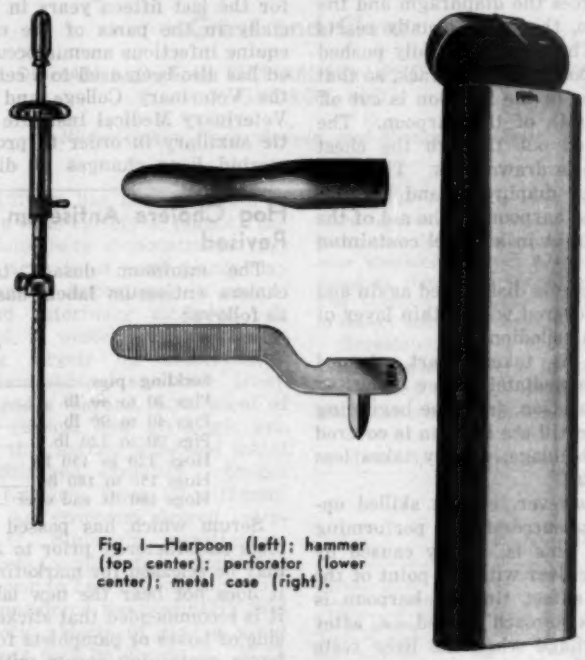

Fig. 1—Harpoon (left); hammer (top center); perforator (lower center); metal case (right).

The harpoon with the knife pulled back and the mandrel pushed in, is held in the left hand, so that the mandrel is kept pushed in by the palm. It is then inserted straight into the opening. The horse's head is held by the right hand, thus providing a good contact with the horse and his reactions. If the wall of the chest has not been completely penetrated by the perforator, the remaining part is pierced by drilling movements with the harpoon. When the point of the harpoon has reached into the pleural sac by the point of the mandrel, the harpoon is turned as vertically as possible and inserted 3 to 4 cm. more through the incision. These manipulations with the harpoon aim at lifting the edge of the lung in case it has not collapsed enough by pneumothorax, or the wall of the chest may have been perforated too far up against the horse's back on account of misjudgment at the percussion.

The harpoon is then directed toward the horse's left elbow joint without changing the length of the part inserted through the skin. It is inserted somewhat farther until the diaphragm is reached. A firm, rubbery resistance against the point of the harpoon is then felt. The head of the harpoon starts to move back and forth horizontally

in time to the horse's breathing. Without changing the position of the harpoon in other respects, the stop-shield is fixed at a distance of 3 to 4 cm. from the skin surface. The mandrel is pulled back 1 or 2 cm. One gives a short, powerful jerk and the harpoon pierces the diaphragm and the liver. Then, too, the horse usually reacts very slightly. The knife is rapidly pushed down as far as possible in its track, so that the piece of liver in the harpoon is cut off at the inner mouth of the harpoon. The harpoon is pulled out through the chest wall. The knife is drawn back. The sample, consisting of diaphragm and liver, is pushed out of the harpoon by the aid of the mandrel and caught in a vessel containing fixing solution.

The skin surface is disinfected again and the incision is covered with a thin layer of cotton soaked in collodion.

The harpoon is taken apart, cleaned and sterilized immediately after using.

The whole operation, from the beginning of the percussion till the incision is covered by a collodion bandage, usually takes less than ten minutes.

Sometimes, however, even a skilled operator may be unsuccessful in performing the operation. This is usually caused by not reaching the liver with the point of the harpoon. The safest time to harpoon is when the horse's stomach is filled, *i.e.*, after a meal of roughage when the liver rests tightly against the diaphragm.

Complications are unusual. In the author's experience with 300 harpoonings, only an occasional abscess has developed in the chest wall. In one case, hemorrhage from the intercostal artery was observed. In a couple of cases, a slight colic occurred when the stomach and/or intestinal wall were included in the sample. Practically all these harpoonings have, however, been performed in a clinic. Further, acute pleuritis and peritonitis, as well as hemorrhages from lungs and diaphragms, have been reported in a few cases with one fatal termination. The diaphragmatic hemorrhages apparently occurred when the point of the harpoon was not sharp enough but slid along the front surface of the diaphragm, cutting a long, bleeding wound instead of perforating.

SUMMARY

The author describes the instruments and technique for liver biopsy in the horse. The operation is simple and, if correctly performed, practically without risk to the horse. The operation has been carried out for the last fifteen years in Sweden, especially in the parts of the country where equine infectious anemia occurs. The method has also been used to a certain extent at the Veterinary College and at the State Veterinary Medical Institute as a diagnostic auxiliary in order to prove or exclude morbid liver changes of different kinds.

Hog Cholera Antiserum Labels Revised

The minimum dosage table for hog cholera antiserum labels has been revised as follows:

Weight	*Minimum dose (cc.)*
Suckling pigs	20
Pigs 20 to 40 lb.	30
Pigs 40 to 90 lb.	35
Pigs 90 to 120 lb.	45
Hogs 120 to 150 lb.	55
Hogs 150 to 180 lb.	65
Hogs 180 lb. and over	75

Serum which has passed all prescribed tests satisfactorily prior to April 15, 1951, may be released for marketing even though it does not bear the new label. However, it is recommended that stickers for the outside of boxes or pamphlets for the inside of boxes containing serum with the old label call attention to the new minimum dosage table.—*Virus-Serum Control Memo (BAI) 51-4, March 13, 1951.*

Pseudomoniasis

Water high in sodium salts will produce lesions similar to those of pseudomoniasis—namely a generalized edema.

Predisposing factors in pseudomoniasis are chilling, malnutrition, debeaking, removal of the distal portion of one wing, wing banding, sinusitis of turkeys, and insanitary pens.

Treatment consists of implanting streptomycin-penicillin pellets. Administration of sulfonamides, streptomycin and penicillin, and streptomycin in water were only moderately effective under similar conditions.—*Bimonthly Bull., North Dakota Agric. Exper. Sta., Nov.-Dec., 1950: 59-61.*

NUTRITION

The Estrogenic Effects of Extracts of Spring Rye Grass and Clover

F. C. DOHAN, M.D.; E. M. RICHARDSON, Ph.D.; R. C. STRIBLEY, B.S.; P. GYORGY, M.D.

Philadelphia, Pennsylvania, and Mason, Michigan

ESTROGENIC ACTIVITY has been reported in extracts from a wide variety of plants. Recent observations have demonstrated that the estrogenic activity of some plants may be of considerable importance in animal husbandry and veterinary medicine. It has been found, in western Australia, that sheep feeding largely on subterranean clover (*Trifolium subterranean* var. Dwalganup) developed a marked impairment of fertility with clinical and histologic evidence, in both the castrate male and intact female, of prolonged excessive estrogen stimulation. Extracts from 20 different strains of *T. subterranean* showed estrogenic activity.[1,2] Similarly, investigators in England[3] have found certain unspecified grasses and clover to have estrogenic activity and have considered the possibility that the galactopoietic effects of spring grass in lactating cows may be due to it. With these considerations in mind, extracts from a number of plants were investigated for qualitative evidence of estrogenic activity.

Methods.—The plants were harvested in Michigan on May 4, 1949, except the fall rye which was harvested Nov. 14, 1949. Extracts of the fresh material were prepared by refluxing for four hours with hot methanol. These were hydrolyzed with alkali and acid and the phenolic fraction isolated. To minimize oxidation, alcoholic extractions were started within two hours after cutting the samples. An atmosphere of nitrogen was used whenever possible during processing and storage, and several additions of ascorbic acid were made during processing.

Estrogenic activity was assayed by two methods: (1) Spayed adult female mice (C F 1) were injected with a corn oil mixture of the plant extracts twice daily for three days and vaginal smears taken approximately seventy-two and ninety-six hours after the first injection. (2) Infantile female mice weighing between 8 and 12 Gm. were injected as above, and seventy-two hours after the first injection the uterine weight was compared to that of uninjected controls.

Results.—Table 1 shows that estrogenic activity was present in spring rye grass and spring clover. Extracts were toxic in the infantile mice in higher doses. Because

TABLE 1—Estrogenic Effect of Plant Extracts

Plant	Dose* fresh wt. (Gm.)	Test response: castrate mice** vaginal estrus	Test response: immature mice uterine wt. incr. (%)
		Negative response	
Orchard grass Dactylis glomerata	130	0/3	<30(3)†
Spring wheat Triticum aestivum, var. Yorkwin	130	0/5	———
		Trace Response	
Blue grass Poa pratensis	13	—	<30(3)
	65	0/5	<30(3)
	130	0/5	121(2)††
Alfalfa Medicago sativa Var. Canadian variegated	13	—	<30(3)
	33	—	<30(3)
	65	0/3	———
	130	0/5	38(3)††
Fall rye Secale cereale, var. Rosen	130	1/4††	———
		Positive Response	
Spring rye grass Secale cereale, var. Rosen	13	—	38(3)††
	33	—	158(3)††
	65	2/3††	———
	130	—	720(1)††
Spring clover Trifolium pratense (June)	13	—	<30(3)
	33	—	92(2)††
	65	4/5††	200(1)††
	130	4/5††	———

*Weight of plant cuttings represented by dose of extract administered.

**Fraction of mice tested showing cornified epithelial cells in vaginal smear.

†The number in parenthesis indicates number of mice. An increase in average uterine weight above that of the controls of less than 30 per cent is not significant.

††Indicates significant response.

The technical assistance of Elizabeth Ransom and Irmgard Landolt is gratefully acknowledged.

From the Department of Medicine and the Nutritional Service, School of Medicine, University of Pennsylvania, Philadelphia, and the Research and Development Department, Wyeth, Inc., Mason, Mich.

of this and the limited quantity of the extracts available, no attempts were made to perform a quantitative assay. However, estimations from the small amount of data obtained indicate that the estrogenic effect in extracts from a kilogram of fresh spring rye grass and spring clover cuttings was approximately equal to that which could be expected from 0.4 *gamma* of estradiol. Trace responses were found for the extracts of the blue grass, spring alfalfa, and fall rye at the highest dose levels tested.

Discussion.—Two of the species of plants reported herein have recently been tested by English investigators.[4] They have also found that clover (*Trifolium pratense*) has considerable estrogenic activity. This, and a few other plants studied in detail by them, showed a marked seasonal variation of estrogen concentration. This may explain our finding of considerably less estrogenic effect in the fall cuttings of rye grass compared with that cut in the spring. The special substances responsible for the estrogenic activity are not yet known.[4]

It seems probable that estrogenic activity in the foodstuff of livestock may be deleterious or beneficial as indicated by the reports of Australian and English investigators. Attention is directed to the possible importance of estrogenic activity of plants grown in this country.

SUMMARY

Estrogenic activity has been found in spring rye grass and spring clover. Little or no activity was found in extracts of fall rye, spring alfalfa, blue grass, spring wheat, and orchard grass. The possibility of this being important in animal husbandry in this country is considered.

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[3]Bartlett, S., Folley, S. J., Rowland, S. J., Curnow, D. H., and Simpson, S. A.: Oestrogens in Grass and Their Possible Effects on Milk Secretion. Nature, *162*, (1948): 845.

[4]Legg, S. P., Curnow, D. H., and Simpson, S. A.: The Seasonal and Species Distribution of Oestrogen in British Pasture Plants. Biochem J., *46*, (1950): 29.

Antibiotic Agents and Animal Growth

Animal proteins contain one or more substances necessary for growth of animals fed rations based largely upon certain plant proteins, or upon highly purified proteins. Vitamin B_{12} is the most important source of APF activity present in animal products.

APF concentrates are derived from the residues of various microbial fermentations. Pronounced growth-promoting effects for chicks of fermentation residues from *Streptomyces aureofaciens* are noted in chicks fed rations based on plant protein, even when supplemented with an excess of vitamin B_{12}. They are not seen, however, when dried whey or fish meal are added to the rations of the chicks. Average weights of chicks fed for twenty-five days on experimental rations with a soybean meal base gained on the basal ration, plus B_{12}, 281 Gm.; while on the basal ration, plus vitamin B_{12} plus aureomycin residue, they gained 360 Gm. Pure crystalline aureomycin produced growth responses of the same type and of nearly the same magnitude as the residues. Therefore, it is tempting to ascribe the effect on growth to their antibacterial effect on the intestinal flora.

Aureomycin residue still displayed growth-promoting activity after a sufficient treatment with alkali to destroy the antibacterial activity of the antibiotic for *Staphylococcus aureus*.

Weight gains of a similar type were produced in pigs. Over a feeding period of six weeks, pigs fed a basal ration of soybean oil meal furnishing the only protein gained 0.88 lb. per day, whereas the basal ration plus B_{12} produced gains of 0.98 lb., and a basal ration plus vitamin B_{12} plus streptomycin gained 1.48 lb., and a basal ration plus APF supplement, *i.e.*, aureomycin residue, 1.43 lb. per day.—*Nutr. Rev., Oct., 1950:298-300.*

Subcutaneous implantation of 12-mg. pellets of stilbestrol did not increase the gain of suckling lambs of either sex during the feeding period (*J. Anim. Sci.*, Aug., 1950). Such pellets, however, significantly increased the rate of gain when implanted in the neck at the base of the ear of either 4-month-old feeder lambs or 7- to 8-month-old feeder lambs.

Vitamin D Effective Following Deficient Winter Ration

Lambs wintered outside and fed a diet which included green oats, old pasture, and concentrates, but little hay, developed rickets with characteristic hypophosphatemia and pathologic bony changes. Two large doses of vitamin D proved effective in maintaining blood phosphorus levels and preventing all but the mildest radiographic evidence of rickets.—*Vet. Rec., 62, Oct., 1950: 603-606.*

Cobalt.—Known only to chemists a few years ago, cobalt has stepped to the front rank of trace minerals along with iodine, manganese, boron, copper, *et al.* As told by *Guernsey Breeders' Journal*, "The largest farmer's coöperative now puts cobalt sulfate in every ton of dairy-cow feed."

Poultry Offal in Mink Rations.—Use of "caponette" waste (head, feet, viscera from hormone-treated birds) in rations for mink is suspected of causing many reproductive failures, and a committee representing mink and poultry interests has been appointed by U.S. BAI Chief Simms to study the problem. The heads are believed to be the main cause of trouble, since they contain the residue from the implanted diethylstilbestrol pellet.

Favorable effects on poultry of such materials as fermented whey or other milk products, soil, yeast, and fermentation solubles may be due at least in part to the presence of promotants which affect the intestinal flora.—*Feedstuffs, Aug. 12, 1950.*

Alfalfa hay furnishes calcium and phosphorus at a ratio of about 6 : 1, whereas the dairy cow needs these elements in the ratio of about 2 : 1. The imbalance may be corrected by feeding disodium phosphate, but not with bone meal. Milling by-products, where they are fed, furnish phosphorus, but for range cows not being fed grain, disodium phosphate in the drinking water is the correction of choice.

Nutrition and Radiation Damage.—The mortality in mice exposed to x-rays was markedly increased in the presence of both chronic and acute essential fatty acid deficiency.—*Abstr. in Nuclear Sci. Abstr., 4, Oct. 15, 1950: 830.*

Stilbestrol in Beef Heifers.—Feed efficiency and feed consumption were significantly increased by implantation of 42-mg. stilbestrol pellets in beef heifers, while the feeding of thiouracil (4 Gm. daily) did not have any noticeable affect. The feeding of thyroprotein decreased the rate of gain and the feed efficiency.—*J. Anim. Sci. (Aug., 1950).*

Phosphorus Deficiency.—Although 1950 was an excellent grass season in Montana, laboratory tests on 24 blood samples from cattle showed that only four had a satisfactory phosphorus level.

Jaundice of Sheep

A diagnosis of chronic copper poisoning is usually not very difficult to establish. The disease occurs most frequently in sheep which are grazing on pastures dominated by subterranean clover on particular soils and under particular seasonal conditions.—*Austral. Vet. J., 26, Sept., 1950:* 229-232.

Procaine Hydrochloride Intravenously for Tetanus in Horses and Mules

Procaine hydrochloride intravenously gives lasting relaxant action in tetanus cases in horses and mules. It has produced better results than any other treatment and has resulted in a big increase in complete recoveries.

Inject 100 to 150 cc. of a 2½ per cent procaine hydrochloride solution intravenously once daily for the first two days, then every other day for two or three doses. Improvement is noted in most cases in forty-eight hours. No other therapy is used. By buying procaine hydrochloride crystals wholesale and dissolving them in sterile water, the cost is reasonable.—*Charles C. Burns, D.V.M., Thomasville, Ga.*

EDITORIAL

We Do Not Need More Veterinary Schools Now

The Korean war and succeeding developments, particularly the expansion of our armed forces and plans for civilian defense, have again caused intensive study of the nation's needs for professionally and technically trained manpower. This is especially true with respect to physicians, dentists, and veterinarians.

Early recognition of unusual needs for personnel in the three medical fields was largely responsible for enactment of the "doctor draft law" by the 81st Congress to meet the urgent requirements of the armed forces. Since then, other professional manpower studies have been made by advisory groups appointed either by the President, other government agencies, or by groups representing the professions.

On the basis of these studies or surveys, some authorities have concluded that there will be a serious shortage of physicians and dentists within five to ten years that will be difficult to overcome. Certain measures have been suggested or recommended to meet the situation, including (1) increased enrollments, (2) accelerated curriculums, and (3) expansion of existing educational facilities.

It is understood that some increase in medical and dental school enrollments is possible, although not enough to meet the estimated deficit. As for accelerated curriculums, there is strong and practically unanimous opposition among educational authorities to any speed-up plan, mainly because the accelerated programs of World War II proved unsatisfactory on several counts. It is generally agreed that a program of expanding existing facilities or of large-scale building could not be completed and the enlarged facilities put into operation in time to have any great effect upon the really urgent needs for added professional personnel in the next few years.

There are other objections, such as the financial burden placed upon our universities and colleges, the opportunity or excuse it would afford for proponents of federal aid to medical education and, perhaps more important, the aggravation of an already acute shortage of well-trained faculty and clinical staff personnel.

Fortunately, veterinary medicine appears to be in a more favorable position. The known needs of the armed forces for Veterinary Corps officers are not excessive; in fact, they are relatively modest. Some civilian needs are yet to be satisfied; there is shortage of general practitioners to care for our expanded animal agriculture, and more veterinarians are needed in animal disease control work, both federal and state. More qualified personnel is also being sought for teaching and research, for meat inspection, and for public health work.

However, in the past few years there has been a marked increase in facilities for veterinary medical education and, as a result, in student enrollment in the United States, which promises to add very appreciably to veterinary manpower in the near future, providing nothing happens to interfere with the enrollment at the accredited veterinary colleges for several years. The increase in schools and expansion in student enrollment are almost phenomenal when viewed in relation to the size of the profession. From 1944 to 1947, seven new schools of veterinary medicine were established, *an increase of 70 per cent* over the ten in operation in this country before 1944.

The increase in student enrollment is almost as striking when compared with the low figure reached during the last war. In 1945, the total student enrollment was just under 2,000; for the academic year 1950-1951, it is nearly 4,000—an increase of 50 per cent in five years. What this signifies to the future numerical strength of the profession can, perhaps, best be visualized by reviewing some data on schools, student enrollment, number of graduates, and the census of veterinarians. A summary of developments since 1900 will help to orient our present position and outlook.

A REVIEW OF THE SCHOOL SITUATION

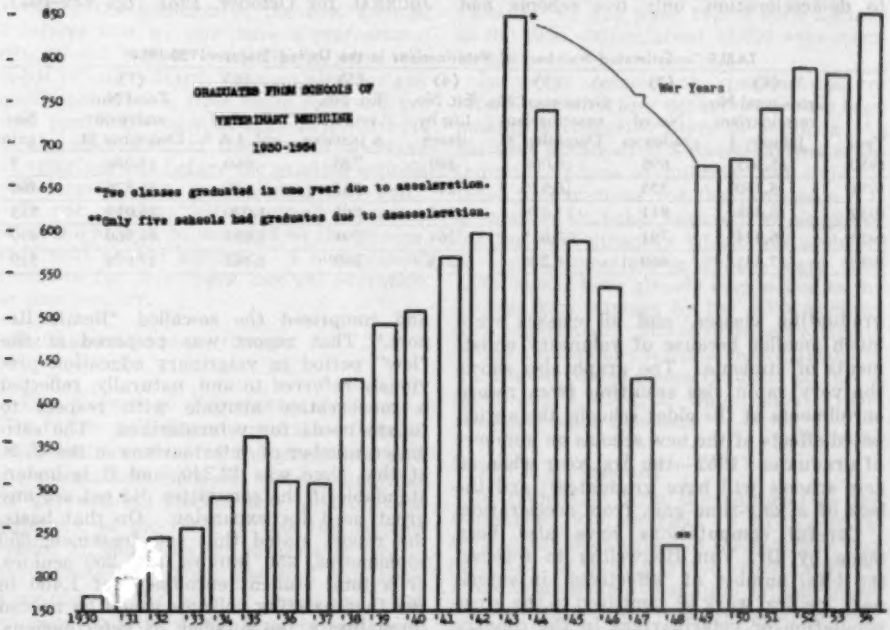
At the start of the century, there were 17 colleges of veterinary medicine in North America (15 in the United States and 2 in Canada) with an enrollment of about 700, and a graduating class of 184 in 1900. The U. S. Census Bureau placed the number of veterinarians in the United States in 1900 at 8,163. In 1910, the schools had increased to 23, with an enrollment of about 3,400, and the graduates numbered 868. The census of veterinarians in 1910 was 11,652.

The years 1911 and 1918 deserve special mention because, in each of those years, the veterinary graduates reached all-time identical highs of 944 from the 23 and 24 schools, respectively. Then came World War I, during and following which there was a sudden and marked decrease in the number of schools and of graduates. There were only 269 graduates from 19 schools in 1919; in the decade year of 1920, 19 schools were in operation, with an enrollment of 966, and 408 graduates. The census figure for veterinarians in the U. S. was 13,494.

The decade of 1921 to 1930, inclusive, saw an all-time low in figures relating to veterinary medical education and, in fact, a low in apparent prospects for veterinary medicine as a career. The number of schools dropped to 13; the total enrollment of students averaged about 700 with a low of 588 in 1925-1926, and only 122 were graduated in 1927, *an average of less than ten per school.* In 1930, the 13 schools had a total student enrollment of 1,212, of which 188 graduated. The Census Bureau reported 11,863 veterinarians that year, a decrease of 1,631 since 1920 and a good indication of the "hard times" which veterinary medical education and veterinary medicine had suffered.

The upturn started in the late 1920's and continued steadily throughout the 1930's. The student enrollment continued to climb even though one more school closed in 1933. It rose from 1,378 in 1931 to 2,414 in 1940, a high which was not to be exceeded until after World War II. Of the 2,414 students in 1940, 522 graduated from the 12 approved schools. The census figure that year was officially given by the Census Bureau as 10,957, a drop of more than 900 from 1930; however, the AVMA data for that year indicate that there were over 12,000 graduate veterinarians in the country.

The decade from 1941 to 1950 was momentous as already indicated. Although World War II brought serious problems, the enrollments of the 12 schools never dropped below 2,000 (the approximate figure for 1945), and has practically doubled since then with the opening of the seven



Graph 1—Graduates from Schools of Veterinary Medicine, 1930-1954. This graph is based on the schools in the United States only. "War years" refers to the effect of World War II on the number of graduates.

new schools, plus the large numbers of applicants who have sought admission to all of the schools for the past several years.

As of 1951, the picture is this:

19 colleges of veterinary medicine in the U. S. and Canada (17 in the U. S.).

3,691 total student enrollment (exclusive of graduate and special students).

16,000 graduate veterinarians in the U. S. (according to latest AVMA calculation).

LOOKING AHEAD FIVE YEARS

What all of this means in terms of available veterinary manpower for the years ahead is strikingly depicted in data assembled by Dr. C. D. Van Houweling for the AVMA Emergency Advisory Committee. The graph reproduced here shows the graduates from schools of veterinary medicine for the years 1930 to 1954, inclusive, the significant period now concerning us. The bar graphs, beginning in 1940, are of special interest because they show the peak of graduates reached in 1943 due to wartime acceleration, the gradual falling off because of reduced enrollments during the war years, and the low point of 1948 when, due to de-acceleration, only five schools had graduating classes, and all classes were much smaller because of voluntary enlistments of students. The graph also shows the very rapid rise resulting from record enrollments at the older schools, the anticipated effects of the new schools on numbers of graduates (1952—the first year when all new schools will have graduates), and the lack of a long-time gain from acceleration.

Careful computations have also been made by Dr. Van Houweling to forecast the total number of "effectives" in veterinary medical work as compared to the gross population of veterinarians in the country (see table 1). Starting with Jan. 1, 1950, as a base, it is shown that the gross total of veterinarians in the U. S. was somewhat over 15,000 on that date, increased to 16,000 as of Dec. 31, 1950, and is expected to exceed 18,000 by Dec. 31, 1954. In terms of "effectives" or active veterinarians, the corresponding figures are 15,040 for Dec. 31, 1950, and over 17,000 for Dec. 31, 1954, a net gain of over 2,000.

It is believed that the figures given in the table are the most valid estimates that have been made for a number of years. They indicate quite clearly, we believe, the effect which current high enrollments at our schools of veterinary medicine may have upon the potential of veterinary personnel in this country during the next few years, assuming of course that nothing happens to seriously change the present picture. In fact, the estimates are known to be conservative with respect to prospective growth of the veterinary population.

The last really comprehensive study of factors affecting veterinary medical education and the profession in this country was by the Committee on Education in 1930. The results of this study were reported in the JOURNAL for October, 1931 (pp. 689-702), and comprised the so-called "Bemis Report." That report was prepared at the "low" period in veterinary education previously referred to and, naturally, reflected a conservative attitude with respect to future needs for veterinarians. The estimated number of veterinarians in the U. S. at that time was 12,240, and it is understandable if the committee did not see any great need for expansion. On that basis, the report stated that 400 freshmen, 350 sophomores, 350 juniors, and 300 seniors, or a total student enrollment of 1,400 in the then existing colleges would be needed to maintain the number of veterinarians.

Today, with the seven new schools and high enrollments, it appears that no ceiling

TABLE 1—Estimated Numbers of Veterinarians in the United States—1950-1954

Year	(1) Gross total No. veterinarians January 1	(2) No. of graduates	(3) Gross total No. veterinarians December 31	(4) Est. No. lost by death	(5) Est. No. retired & inactive	(6) Total of col. 4 & 5	(7) Total No. active on December 31	Net gain
1950	15,305	695	16,000	240	720	960	15,040	?
1951	15,760	755	16,515	247	742	989	15,526	486
1952	16,268	811	17,079	255	765	1,020	16,059	533
1953	16,824	791	17,615	264	791	1,055	16,560	499
1954	17,351	869	18,220	273	869	1,142	17,078	519

can be placed on the total number of veterinarians that can be well utilized in this country. We have nearly three times as many students in school as the Bemis Report suggested for maintaining a status quo, which certainly is a large and healthy growth. The point we make is not that we have *enough veterinarians* but rather that the data presented here indicate that we have *enough schools* of veterinary medicine to meet present real needs and provide for still further growth about as fast as graduates can be properly absorbed into existing fields of veterinary medical endeavor, with some left over for the new fields that are being opened, such as veterinary public health work.

In an address on "Veterinary Medical Education—Its Evolution and Present Status"* presented at the dedication of the new veterinary hospital and clinic building at the University of Minnesota last October, Dr. W. A. Hagan, dean of the New York State Veterinary College and secretary of the AVMA Council on Education, had this to say:

"With the addition of the new schools, I believe that we now have a professional educational system adequate to serve the needs of our country. I see no need for any additional schools, since these could not get into production soon enough to contribute to the alleviation of the present shortage of veterinarians before the existing schools will largely have accomplished this end."

In our opinion, this statement expresses what might well be accepted as the general judgment on the adequacy of our present facilities for veterinary medical education in this country.

*See pages 287-292 of this JOURNAL.

The Future of Veterinary Medicine.—The future will depend upon the efforts of individual members of the profession and the associations, upon the clear recognition by government, stockowners, and citizens generally, of the value of, and the support needed by, education and research in veterinary medicine. Such research has been supported in the past by sheep and wool growers, and by dairy farmers and beef producers. However, race horse owners and the patrons of horse racing are cited as "the notable exceptions" to such support from animal owners.—*Austral. Vet. J., 26, (June, 1950) : 130-135.*

Member and Nonmember Directory Listings

Inclusion of the name of a veterinarian in the "AVMA Directory" does not necessarily mean that he is a member of the Association. Occasional letters received at the central office indicate that this fact is not always understood, even though the foreword to the 1950 edition indicates the difference between member and nonmember listings.

AVMA members are distinguished by the setting of their last names in CAPITAL letters, thus: MERILLAT, Louis. The last names of nonmembers are set in lower case letters, thus: Doe, John. Observation of this difference will be helpful to those using the Directory.

As explained in the foreword also, an effort is being made to obtain complete listings on every graduate veterinarian in the United States and possessions, and in Canada. Of the some 14,000 such listings in the 1950 edition, about 10,000 were members.

In recent months, the professional relations and directory departments have been making a concerted drive to obtain a 100 per cent listing of U.S. veterinarians as an important phase of military and civil defense preparedness for the profession. It is expected that this work will be completed for the next directory which will probably be issued sometime in 1952. More than 1,000 names have already been added to the listings kept current by the AVMA directory department. The most recent estimate of the number of graduate veterinarians in the United States places the total at 16,000 as of Jan. 1, 1951, of whom about 11,000 are Association members.

What Is a Hapten?

In connection with the editorial in the December, 1950, JOURNAL (p. 477), our attention has been called to the fact that our definition of hapten is not exactly correct. A more accurate explanation is: an active fraction extracted from Rh positive cells possesses properties of the hapten. That is, the substances will not stimulate the formation of Rh antibodies *in vivo* but will neutralize Rh antibodies *in vitro*.

CURRENT LITERATURE

ABSTRACTS

Hematology of Egyptian Buffaloes

When 60 normal buffaloes were examined for erythrocytes, leucocytes, hemoglobin, and differential count, the findings were in close agreement with those reported for cattle.

The red blood corpuscles per 1 cc. of blood, the hemoglobin percentage, the white blood cell count, and the lymphocyte count varied inversely with age of the animal—being high in the young and lower in mature animals. Neutrophils and eosinophils, on the other hand, increased with age. —[*Hussien Reda: The Hematologic Examination of Normal Blood of Egyptian Buffaloes. Am. J. Vet. Res., 12, (Jan., 1951): 23-25.*]

Brucellosis in Chickens

The mortality of the chickens was considerable, particularly in the presence of a primary or secondary infection along with brucellosis.

Intramuscular and intraperitoneal injections, as well as feeding, of Brucella caused bacteriemia, fecal excretion of organisms, and significant agglutinin titers.—[*O. Felsenfeld, Viola M. Young, E. Loeffler, S. J. Ishihara, and W. F. Schroeder: A Study of the Nature of Brucellosis in Chickens. Am. J. Vet. Res, 12, (Jan. 1951): 48-54.*]

Prolonged Pregnancy in Cows

Prolonged pregnancy may be a genetic defect which may or may not be accompanied by malformation of the fetus. Of the 2 cases described, one pregnancy lasted for 420 days, and the calf was described as the "bulldog" type. The head was the size of a 6-month-old calf. In the second case, the cow was slaughtered after 425 days of pregnancy. The calf presented the picture of osteochondrodystrophy.—[*Rasbech, N. O.: To tilfaelde af partus serotinus hos koen i forbindelse med misdannelse af fosteret (Two Cases of Prolonged Pregnancy in Cows Associated with Malformation of the Fetus). Nord. Vet-med., 2, (1950): 122-130.*]—A.G.K.

Necrophorus Infection in Pigs

An outbreak of a disease in young pigs, characterized by the formation on the snout of pustules which eventually ulcerated, is described. Deaths occurred in three to four weeks, probably due to inanition. In one litter, 8 pigs died while 3 treated with sulfamethazine, given orally, survived.—[*Eieland, Erling, and Faanes, T.: Actinomyces necrophorus-infeksjon hos smagriser og forsok med sulfamethazinbehandling (Actinomyces Necrophorus Infection in Suckling Pigs and Experiment on Treatment with Sulfamethazine). Nord. Vet.-med., 2, (1950): 204-208.*]—A.G.K.

Avirulent Swine Erysipelas Vaccine

Six swine were each vaccinated with two doses of a living avirulent culture of *Erysipelothrix rhusiopathiae* three weeks apart. Five weeks later, these animals plus 5 nonvaccinated swine were each subjected to percutaneous injection with six strains of *E. rhusiopathiae*, including the cultures used for vaccination. The avirulent cultures produced no local lesion either in the vaccinated or nonvaccinated animals. Four of the vaccinated animals had slight to severe skin lesions. Of the nonvaccinated animals, 1 died, 2 were killed in a moribund state, and 2 had severe local reactions.—[*Bakos, K., and Lehnert, E.: Eine Prufung des schwedischen avirulenten Rotlaufimpfstoffes auf sein immunisierendes Vermogen mittelst der perkutanen Infektionsmethode (A Study of the Immunizing Capacity of the Swedish Avirulent Swine Erysipelas Vaccine by Means of Percutaneous Infection). Nord. Vet-med., 2, (1950): 113-121.*]—A.G.K.

Virus Abortion in Mares

An outbreak of virus abortion occurred on a breeding farm with 23 pregnant mares of which 12 aborted. Several months previous to the outbreak, a mare with symptoms of equine influenza had been added to the herd. Equine influenza then appeared in a number of mares and colts. Three of the mares which eventually aborted had signs of influenza a few days before aborting. The others had no prodromal symptoms. Necropsy and histopathologic examination of the aborted foals revealed changes identical to those described in the literature for virus abortion. Of particular interest was the similarity of the histopathologic findings to that of contagious canine hepatitis. It is stated that, although this is the first report of virus abortion in the Scandinavian countries, it is fairly certain that the disease has been present since 1928. The relationship of equine influenza to virus abortion is discussed, but no definite conclusion regarding their relationship was made.—[*Hansen, Hans-Jorgen, and Holst, Sven J.: Fall av virusabort hos sto i Sverige (Virus Abortion in Mares in Sweden). Nord. Vet.-med., 2, (1950): 131-159.*]—A.G.K.

Sodium Fluoride as Swine Ascaricide

Trials with sodium fluoride (NaF) on 53 pigs, of which only 6 were free of ascarids, were undertaken to determine the tolerated effective doses. The following doses are recommended: for pig weighing 12.5 to 25.0 kg., 1 per cent NaF in 0.5 kg. of ground feed; for pig weighing 25.0 to 37.5 kg., the dose may be repeated. A third dose may be given to pigs of 37.5 to 50.0 kg. in weight, and larger animals may be given a fourth treatment. Five sows pregnant about six weeks were given three treatments with no apparent ill effects on gestation or parturition. Since NaF is dangerous to man and animals, certain precautions are advised regarding its use.—[*Bendixen, H. C., Roth H., and Thordal-Christensen, Aa.: Natriumfluorid som middel mod spolorm hos svin (Sodium Fluoride as a Vermifuge Against Ascarids in Swine). Nord. Vet.-med., 2, (1950): 385-404.*]—A.G.K.

Foot-and-Mouth Disease Control

The virus of foot-and-mouth disease, which makes its appearance in the blood stream about six hours after infection, may be found in practically every organ of the body of the susceptible host, including bone marrow, and is excreted in saliva, milk, urine, and feces.

Meat from infected animals does not seem to play an important role in dissemination of the disease. The bones, skin, and hoofs, on the other hand, may keep the virus alive for months even when stored under seemingly unfavorable conditions. Ordinary germicides are not effective with any degree of certainty. Freezing and preservatives do not destroy the virus.

While infected animals and recovered carriers of the disease are very important in the dissemination of the virus, they are more easily controlled than the numerous human, and other nonsusceptible carriers.

Artificial infection can be accomplished with dilutions of 1:5,000,000, but cultivation *in vitro* has been unsuccessful. Hyperimmune serum furnishes immediate passive immunity for about nine days, which is about the course of disease in a single animal. A single injection of the vaccine now used in Germany, which is briefly described, meets the requirements laid down by the Bureau of Animal Industry of that country. It begins to furnish protection in six days and reaches its maximum effectiveness in fourteen days.—[*Mussemeier, F.: Die Maul- und Klauenseuche und ihre Bekampfung (Foot-and-Mouth Disease and Its Control). Monatsh. f. Vet.-med., 4, (1949): 81-88.*]—F. W. MEIER.

Tuberculosis-like Skin Lesions

This paper is a summary of a 192-page thesis. The investigation was conducted from 1938 through 1947 and consisted of field surveys, bacteriologic and histopathologic studies, as well as transmission experiments. The disease exists in all parts of Sweden but with varying frequency. The cases were found during routine tuberculin tests where reactors were found in herds of cattle known to be free of tuberculosis. The cause of the variation in distribution is not known. The author believes that the disease has a low infectivity and may be transmitted indirectly by some other animal or agent. It is believed that wound infection may be important.—[*Hedstrom, Harry: Studies on So-Called Skin Tuberculosis in Cattle, Concerning its Prevalence in Sweden, Its Diagnosis, Etiology, and Allergy to Tuberclin. Nord. Vet.-med., 2, (1950): 83-99.*]—A.G.K.

BOOKS AND REPORTS

Pharmaceutical Emulsions

This book is addressed primarily to the pharmacist, but may find some application for veterinarians interested in making new products. The theory of emulsification and the structure of emulsions is discussed, and the essential, practical details are classified and presented.

The large, and rapidly growing, list of emulsifying agents makes the book particularly valuable, since it enumerates the advantages and drawbacks of the various emulsifying agent groups. —[*Pharmaceutical Emulsions and Emulsifying Agents. By L. M. Spalton. Cloth. 132 pages. Chemical Publishing Co., 26 Court St., Brooklyn 2, N.Y. 1950. Price $3.75.*]

Ecology of Animal Parasites

The book is written essentially for students of ecology and parasitology, who are accustomed to collecting data and observations on this subject. To this end, the field of parasitology is reviewed from all possible angles with emphasis on the taxonomic background.

Veterinarians will be interested particularly in Part Three, "Host-Parasite Relationships." This discusses host specificity and also the action of parasites upon their hosts. Part One, "Animal Associations, Definitions," Part Two, "Adaptations to Parasitism," and Part Four, "Physiology of Parasites" will probably be less interesting.

The book is well prepared and excellently illustrated, but it does not lend itself readily to the needs of the practicing veterinarian who is confronted with a problem of parasitism and requires a prompt and easy method of identifying this parasite and outlining a control program which can be used by his client, the livestock owner. On the other hand, to the student of parasitology it will provide excellent background material and a better appreciation of the over-all problem of animal parasitism. In other words, it is a reference text rather than one which practitioners will

use daily.—[*Ecology of Animal Parasites. By J. G. Baer. Cloth. 224 pages, 8½ in by 11 in. Profusely and excellently illustrated. University of Illinois Press. Urbana, Ill. 1951. Price $5.00.*]

Public Health in Japan

The 1949 annual summary of public health and welfare activities in Japan is issued in three parts. Volume I (143 pages); Volume II, Part One consisting chiefly of 70 tables, charts, and graphs; and Volume II, Part Two consisting of some 40-odd additional tables.—[*Public Health and Welfare in Japan, Annual Summary—1949. Vol. I; Vol. II, Part One; Vol. II, Part Two. General Headquarters Supreme Commander for the Allied Powers Public Health and Welfare Section. Brigadier General Crawford F. Sams, Chief, Medical Corps, APO 500, San Francisco, Calif.*]

Japanese Equine Encephalitis

This book records the results of studies on the virus of Japanese equine encephalitis from the standpoint of histopathologic studies in horses naturally affected and experimentally infected, of the value of a formolized vaccine, of the complement-fixation test, of the hematologic changes occurring in a horse naturally affected and one artificially infected, analysis of blood and urine, and isolation of the virus. Similar studies are reported for the effect of the virus on swine, on chickens, and on cattle.

The book proper is in Japanese, but each of the 16 chapters has a summary in English. The summary includes explanations of figures and tables contained in the book.—[*The First Report on Japanese Equine Encephalitis. Government Experiment Station for Animal Hygiene, Masayoshi Kobayashi, Director. Paper. 203 pages. Government Experimental Station for Animal Hygiene, Nishigahara Kita-ku, Tokyo, Japan. 1949.*]

Practical Microscopy

This book tells of the use of the microscope from the simple discussion of magnification, with diagrams, through the mechanical parts of a microscope and the stand upon which these are arranged for convenient use, and right on down to ultraviolet and electron microscopy. Along the way are chapters on objectives and eyepieces, the numerical apertures, methods of illumination, photomicrography, preparation of specimens, and the use of polarized light. Also described are the metallurgic microscope and the binocular scope.

The text is prepared in such a way that it begins with a brief review of the basic, underlying principles, and then by words, pictures, and diagrams shows just how the desired ends are accomplished. The authors succeeded well in their effort to prepare a book which enables the practicing veterinarian and physician to understand and apply the technique of modern microscopy.—[*Practical Microscopy. By L. C. Martin and B. K. Johnson. 2nd ed. Cloth. 124 pages, 5 in. by 7 in. 90 figures. Chemical Publishing Co. 26 Court St., Brooklyn 2, N.Y. Price $2.50.*]

Meat Hygiene

This book is written for persons who expect to engage in the field of meat hygiene control and is written by the person who is probably in the best position in the United States to impress upon such persons the responsibility of learning thoroughly all the principles involved so that meat hygiene control may be applied effectively. This approach means that the book is addressed primarily to veterinary students and veterinarians who, by education and training, are prepared to perform such basic services as antemortem examination of food animals and postmortem examination of their carcasses.

The intelligent application of the principles of meat hygiene requires individual initiative as well as proper direction. When these operate simultaneously, the consuming public is assured of food of high quality and of good nutritional properties. Undoubtedly, meat hygiene protects the public meat supply and also safeguards the nation's livestock economy.

Beginning with the history of meat inspection from antiquity and carrying on through the various historic chapters of the procedure, the book discusses the several elements of meat hygiene and that goes into antemortem and postmortem inspections, indicating in each instance the general technique of the inspection and the diseases which should be considered. In these, there is a division of consideration into etiology and pathogenesis symptoms and antemortem significance or, alternately, for the lesions and postmortem significance.

The appendix discusses methods of examination of water and sewage and of the various food inspection regulations and the acts which control these activities.

An earlier chapter contains charts showing the various bones and their articulations and then the cuts wholesale and retail which may be prepared from each type of carcass.

The excellent descriptions of the various diseases and parasites which are encountered in meat inspection and which affect the disposition of carcasses or parts of carcasses—together with the discussion on sanitation, and preparation of meat and meat food products—constitute valuable adjuncts to all veterinarians. This is particularly true since we are taking the position, and rightly so, that it is the veterinarian who is best prepared to perform in an active, as well as advisory, capacity in this field.

Annual Review of Microbiology.—In the February JOURNAL (p. 118), a review of this book erroneously refers to it as volume IX, whereas it should have read volume IV.

It is a book which contains all of the information which will be needed by anyone spending his whole time in work of this type, and yet it is written simply and concisely for use by the veterinarian who is called upon only occasionally to assist one of his clients in the inspection of a home-slaughtered carcass. It should be in the library of every veterinarian in general practice.—*[Meat Hygiene. By A. R. Miller. Cloth. 420 pages. Well illustrated. Lea and Febiger, Washington Square, Philadelphia 6, Pa. 1951. Price $7.50.]*

Serologic Reaction in Health and Disease

The evolution of the universal serologic technique is traced by the author and he concludes that serologic reaction with lipid antigen is biologically universal; that every individual gives a serologic pattern which remains constant while he is in good health, but which undergoes characteristic changes in certain diseases studied. Although the serologic reactions are widely applicable in health and disease, they do present a certain number of false positives. It is these which an attempt is made to discuss and define.

Although the procedure is not yet developed to a point where it can be used as routine, even in medical laboratories, it is presented for its value to students and instructors in the field of immunology who will appreciate its limitations and help to established its practicability.

More than 100 serologic charts are presented—for normal human beings, for diseased human beings, for rabbits, mice, pigs, cows, dogs, guinea pigs, horses, and monkeys, in health and disease.

It is a book for the advanced student and instructor in serologic reactions, immunity, and related fields. The practicing veterinarian or the general reader may find it difficult to apply the facts assembled to everyday problem.—*[An Introduction to Universal Serologic Reaction in Health and Disease. By Reuben L. Kahn. Cloth. 155 pages. Numerous charts and tables. The Commonwealth Fund, 41 East 57th Street, New York 22, N. Y. 1951. Price $3.50]*

Circus Doctor

This is the story of the chief veterinarian of the Ringling Brothers and Barnum and Bailey Circus as he tells it himself to the writer. It is a gripping story of a young veterinarian trained in the diverse fields of the veterinary college and a period of general practice in a southern state. He is employed by the circus primarily because of his complete information of the veterinary problems of horses, but to this basic work, which is the chief problem of every circus, was added a great deal of interesting material on the other circus animals. Much of this information developed as a result of natural curiosity and desire to be helpful and reduce the pain of the 700 animals under his care.

The book reads smoothly and begins situations and cases that any veterinarian will understand, but before it has been finished, one realizes the questions presented to the circus veterinarian when they appear for the first time. For instance, at various stages in his career the author was forced to ask himself: Have you ever tried to doctor a cassowary? Have you ever set a lion's broken jaw? Have you ever filled a bear's tooth? Have you ever treated a colicky camel? Have you ever administered a physic to a boa constrictor? and many others.

This is a book which should be read by every veterinarian; not because every veterinarian is likely to be called to use the information presented, but because each one is interested in animals and that means in many animals. Also, practically all veterinarians are interested in circuses and circus life. It will provide not only entertaining reading but also additional information which may be useful on the next call.—*[Circus Doctor. By J. Y. Henderson, D.V.M., and Richard Taplinger. Cloth. 238 pages. Illustrated. Little, Brown & Company, 34 Beacon St., Boston 6, Mass. 1951. Price $3.50.]*

Veterinary Protozoölogy

This is a laboratory manual for students in veterinary parasitology. It is prepared by placing on each page some three to five questions and leaving under each question room for the student to write in the answer or the information called for. In this way, it carries the student in a natural manner throughout the course in veterinary protozoölogy and parasitology and gives him, at the end of the course, a vast amount of information which he will find useful in everyday practice. The years of experience enjoyed by the author have permitted him to present questions of such a nature and in such a way that the answers will provide information needed by the practicing veterinarian.

Probably no veterinarian already in practice would take the time to review the course in parasitology by using this manual, but were he to do so it would certainly provide an excellent manner of reviewing the subject.—*[Veterinary Protozoology, Veterinary Parasitology Laboratory Manual No. 2. By F. R. Koutz. Paper. 54 pages. 8½ in. by 11 in. Edwards Brothers, Inc., Ann Arbor, Mich. 1951.]*

You and Your Dog

This is a manual for 4-H Club members having as its main objectives to provide boys and girls who live in cities and towns where it is not possible to keep poultry or livestock with a project which will acquaint them with the habits of dogs and to provide them with information on how to properly care for and train them.—*[You and Your Dog, Circular No. 2191, Colorado A. & M. College, Fort Collins. By A. A. Goodman, extension veterinarian. Paper. 14 pages. Mimeo-*

graph. Extension Service, Colorado A. & M. College, Fort Collins. 1950.]

Japanese Experiment Station Report

This is a report of experiments conducted at the government experiment station for animal hygiene. It contains discussions of a new disease which occurred epizoötically among pigs, multiple myodegeneration of sheep, brucellosis in cattle, a formolized vaccine for hog cholera, an anemic substance found in horse serum, the bacterial diagnosis of blackleg, artificial infection of rabbits with glanders, and other subjects.

Each chapter is in Japanese but is followed by a page or two of English summary.—[*Report Number 20 of Government Experimental Station for Animal Hygiene. Nishigahara Kita-ku, Tokyo, Japan. Paper. 301 pages. 1949.*]

Proceedings of Italian Veterinary Medical Society

This book contains a report of activities of the Italian Society of Veterinary Science. Among the subjects which are discussed are the following: minerals and vitamins in veterinary medicine, absorption and elimination of vitamin B_1 in horses, protein metabolism in parathyroid failure, a plant poisoning similar to sweet clover disease, and numerous others.

Although each item is published primarily in the Italian language, each chapter does have a brief summary in English.—[*Atti Della Società Italiana Delle Scienze Veterinarie. Vol. III, 1949. Published by Stab. Grafico F. Lega, Faenza, Italia. Paper. 637 pages. Some illustrations and tables. 1950.*]

Directory of Japanese Veterinarians

The 1950 Directory of the Japan Veterinary Medical Association lists 7,318 members and 9,491 nonmember qualified veterinarians. For each name there is the name of the institution from which the person was graduated, the year of graduation, the type of work done, and present address. The book is entirely in Japanese with only a foreword in English.—[*Japan Veterinary Medical Association Directory, 1950. Published by Japan Veterinary Medical Association, 2 Daikancho, Chiyoda-ku, Tokyo. Torai Shimamura, President, Sadamoto Sakasegawa, Editor.*]

The Onderstepoort Journal

This journal is another in the series of excellent reports from this station at which so much important research in veterinary medicine has been done.

The report is divided into six sections as follows: parasitology, toxicology, nutrition, physiology, reproduction, and wool research. The information is plainly written, presented in excellent type, and on a good grade of paper; and it is amplified with maps, graphs, charts, and pictures.—[*The Onderstepoort Journal of Veterinary Science and Animal Industry. Union of South Africa, Department of Agriculture. Edited by G.v.d. W. De Kock. Vol. 24, Nos. 1 and 2. Paper. 319 pages. Government Printer, Pretoria, 1950. Price 6 s.*]

Received But Not Reviewed

Sheep Management and Diseases. By H. G. Belschner. Published by Angus & Robertson Ltd., 89 Castlereagh St., Sydney, Australia. 764 pp.

Announcements for 1950-51. Bulletin, Graduate School of Public Health. University of Pittsburgh, Pittsburgh, Pa. 48 pp.

Annotated Bibliography, Sulfaquinoxaline. Revised, April, 1950. Merck & Co., Inc., Rahway, N. J. 19 pp.

Newcastle Disease Infection in Man. By C. H. Thompson, Jr. Reprinted from The Military Surgeon, 106, April, 1950, pp. 276-281.

REVIEWS OF VETERINARY MEDICAL FILMS

Immunization.—Sound, 16 mm., black and white, running time about eleven minutes. Produced by Encyclopedia Britannica Films, Inc., in collaboration with Michael Heidelberger, Ph.D., Yale Kneeland, M.D., and Harry M. Rose, M.D., Department of Medicine, College of Physicians and Surgeons, Columbia University. Available from Encyclopedia Britannica Films, Inc., 207 S. Green St., Chicago 7, Ill., at a rental charge of $2.50 for one to three days and 50 cents for each additional day.

This film explains what immunization is and how immunity is acquired. The opening scenes show a sick child and the external symptoms of his illness. Animated drawings reveal the struggle in the blood to produce antibodies to counteract the bacteria and the ingestion of the bacteria by white blood cells.

Later pictures describe the methods of developing immunity through the use of smallpox vaccine, killed vaccines, immune antiserum, and toxoids. The method of preparing smallpox vaccine by infecting calves with cowpox virus is briefly shown, as are the preparation of the other types of immunizing agents. The last portion of the film shows the importance of laboratories and test animals in the development of immunizing agents and techniques and the importance of having all people immunized against diseases.

The subject is shown in an interesting, if brief, manner. It is too elementary for a professional audience but valuable for showing lay audiences the processes of immunization, and is also indicated for students studying basic immunology. Of course, veterinarians will have to explain that the development of immunity in the lower animals is fundamentally the same as in man.

THE NEWS

Eighty-Eighth Annual Meeting

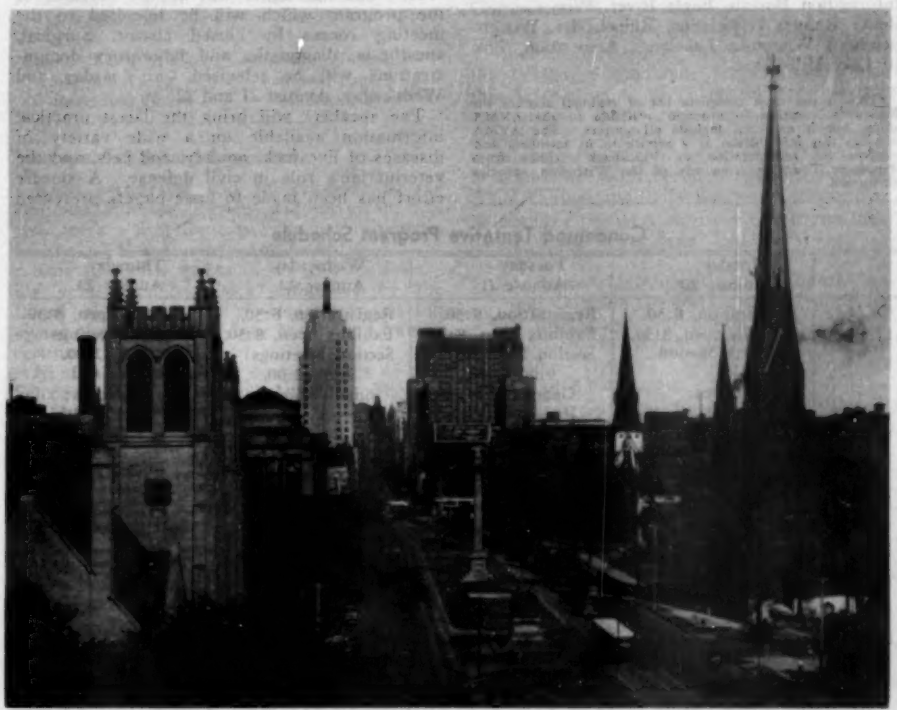
Milwaukee, Wis. – August 20-23, 1951

Milwaukee Exhibit Bookings Set All-Time Record

More commercial firms have reserved exhibit space for the AVMA Milwaukee meeting than in any year past. Two large halls of the Milwaukee Auditorium will be decked out with nearly 60 different displays that give a panoramic account of everything new in products for the profession. Adjoining will be colorful educational exhibits on brucellosis, mastitis, leptospirosis, histoplasmosis, small animal surgery, and various phases of public health and research.

Make Hotel Reservations Now

Milwaukee hotels have allotted sufficient rooms for the expected record-breaking attendance at this meeting, but choice accommodations are going fast and those who delay may not get the kind of rooms they want. If you do not already have a reservation, fill out the form on advertising pages 40-41 of this issue and send it immediately to the hotel of your first choice.



—Milwaukee Journal Photo

The Court of Honor in Milwaukee. The Eighty-Eighth Annual Meeting of the AVMA will be held Aug. 20-23, 1951, in Milwaukee.

SUGGESTIONS FOR A POSTCONVENTION VACATION

Centrally located Milwaukee is a springboard to some of the nation's finest vacation spots. Fishing in the north woods, Great Lakes boat trips, and planned sightseeing tours to any part of the United States or Canada will be readily available to those attending the meeting.

Although the AVMA will not officially sponsor any tours this year, it will provide postconvention vacation travel guidance to members through Happiness Tours of Chicago, an agency that has served AVMA conventions during the past few years. Members interested in making arrangements for escorted vacation tours in connection with the Milwaukee meeting may obtain information by writing directly to Happiness Tours, 39 S. State St., Chicago 3, Ill. Information about vacation places within the state of Wisconsin may be obtained by writing directly to the following regional agencies:*

Minocqua District Resort Association, Minocqua, Wis.
Mary T. Thomas, County Clerk, Vilas County Information Bureau, Eagle River, Wis.
Better Resorts Association, Rhinelander, Wis.
Southern Wisconsin Lakelands Association, Box 10, Lake Mills, Wis.
Mercer Resort & Business Men's Association, Mercer, Wis.
Lac du Flambeau Chamber of Commerce, Lac du Flambeau, Wis.
Sayner Lake Chamber of Commerce, Sayner, Wis.
Boulder Junction Chamber of Commerce, Boulder Junction, Wis.
Wisconsin Indian Head Country, Inc., Hotel Eau Claire, Eau Claire, Wis.
Chequamegon District of Upper 13, Park Falls, Wis.
Civic Club, Lake Tomahawk, Wis.
Door County Chamber of Commerce, Sturgeon Bay, Wis.
Hayward Lakes Region, Hayward, Wis.
Park Falls Chamber of Commerce, Park Falls, Wis.

*This is the most complete list of regional sources for Wisconsin vacation information available to the AVMA office, but it may not include all sources. The AVMA provides this information as a service to its members and receives no remuneration or "kickback" either from Happiness Tours or from any of the Wisconsin agencies mentioned.

The Status of the Milwaukee Convention Program

Section officers have all but completed final arrangements for the scientific program of the Milwaukee AVMA convention, Aug. 20-23, 1951. The highlights will be the portions of the program which will be televised to the meeting rooms by closed circuit. Surgical, anesthesia, diagnostic, and laboratory demonstrations will be televised on Tuesday and Wednesday, August 21 and 22.

The speakers will bring the latest practical information available on a wide variety of diseases of livestock, poultry, and pets, and the veterinarian's role in civil defense. A sincere effort has been made to have papers presented

Condensed Tentative Program Schedule

	Monday August 20	Tuesday August 21	Wednesday August 22	Thursday August 23
A.M.	Registration, 8:30. Exhibits open, 8:30. Opening Session, 9:30. Addresses; Awards; Nomination of Officers.	Registration, 8:30. Exhibits open, 8:30. Section Meetings: 9:00-12:00. General Practice; Research. Women's Auxiliary House of Representatives, 9:30.	Registration, 8:30. Exhibits open, 8:30. Section Meetings: 9:00-12:00. Small Animals; Poultry. Women's Luncheon and Annual Meeting of Auxiliary, 11:30.	Exhibits open, 8:30. Section Meetings: 9:00-12:00. Surgery and Obstetrics; Public Health.
P.M.	Section Meetings: 1:30-4:30. General Practice; Research. Women's Tea and Reception, 3:00	Section Meetings: 1:30-4:30. Small Animals; Poultry.	Section Meetings: 1:30-4:30. Surgery and Obstetrics; Public Health.	Installation of Officers, 12:15. Adjournment.
Night	Open for dinners and meetings of related groups.	AVMA Night at the Wisconsin State Fair.	Alumni Dinners, 6:30. President's Reception and Dance, 9:00.	

which will bring information to veterinarians that can be put to good use in their routine, everyday professional work. Most papers will be followed by discussion and an opportunity for questions. In keeping with the popularity of panel discussions, this form of presentation will be used liberally throughout the sections.

This year, only two sections will meet at one time. In the past, three sections met simultaneously. This will give veterinarians an opportunity to hear more papers than would otherwise be possible.

The formal papers, the panel discussions, television demonstrations, and educational exhibits will truly serve as a "postgraduate" course in veterinary medicine.

Preconvention Executive Sessions at AVMA Headquarters in Chicago

Tuesday, August 14
p.m.—Committee on Budget
p.m.—Board of Governors

Wednesday, August 15
a.m.—Board of Governors
p.m.—Board of Governors
Executive Board

Thursday, August 16
a.m. and p.m.—Executive Board

Friday, August 17
a.m.—Executive Board

Saturday, August 18
a.m. and p.m.—House of Representatives

Humane Act Award Expanded

Merit certificates and subscriptions to the National Humane Review will be given, this year for the first time, to runner-up nominees for the AVMA Humane Act Award.

This additional means of recognizing deserving youngsters has been authorized by the Board of Governors to supplement the top award of a $100 U.S. savings bond and a framed certificate.

Nominees must not be over 18 years of age. Selection of winners will be made in May by the Committee on Humane Act Award, headed by Dr. A. R. Theobald, of Cincinnati, and announced at the opening session of the Milwaukee convention, August 20.

Executive Board Nominations Taking Place in Districts VI and VIII

Ballots were mailed on March 16 to members in Executive Board District VI (Arizona, California, Canal Zone, Central America, Colorado, Mexico, Nevada, New Mexico, and Utah) and District VIII (Arkansas, Kansas, Louisiana, Missouri, Oklahoma, and Texas) for nomination of candidates to be elected for five-year terms. The terms of office of Dr. N. J. Miller of District VI and Dr. W. G. Brock of District VIII expire at the close of the annual meeting.

The nominating polls close May 14, 1951. The five nominees receiving the highest number of votes in each district will be listed on an election ballot to be mailed to eligible voters on or about May 17.

Dr. Krill Elected to Executive Board from District X

As a result of the special election recently completed in District X (Michigan and Ohio) to fill the vacancy on the Executive Board created by the death of Dr. B. J. Killham, Dr. W. R. Krill of Columbus, Ohio, has been elected to fill the unexpired term ending in 1954. Drs. W. A. Young and E. R. Maschgan of Chicago served as a board of tellers on March 14 to count the ballots and certified the foregoing result.

Dr. Krill has had previous experience on the Board having represented his district for one term (1944-1949) and was chairman in 1947-1949.

AVMA To Be Represented on Poultry Inspection and Grading Advisory Committees

AVMA President Coffee was asked by W. D. Termohlen, director of the Poultry Branch of the USDA, to nominate representatives from the Association to serve on industry advisory committees relative to poultry inspection and grading. Dr. Coffee nominated the following members to serve on the advisory committees in accordance with recommendations from the AVMA Food and Milk Hygiene Committee:

1) POULTRY INDUSTRY ADVISORY COMMITTEE TASK GROUP ON POULTRY AND EGG STANDARDS AND GRADES
- Col. Russell McNellis, V.C., Veterinary Division, Surgeon General's Office, Department of the Army, Washington, D. C.
- Maj. Geo. D. Batcheldor, V.C., Meat and Dairy Hygiene School, Quartermaster Depot, Chicago, Ill.

2) SUBTASK GROUP ON PUBLIC HEALTH PROBLEMS
- Dr. J. W. Cunkelman, Veterinary Division, Swift & Co., Chicago, Ill.
- Dr. John L. Cherry, State Board of Health, Dover, Del.

3) POULTRY SUBTASK GROUP
- Dr. H. E. Kingman, Jr., c/o Wilson & Co., 4100 S. Ashland Ave., Chicago, Ill.
- Dr. J. W. Cunkelman, Swift & Co., Chicago, Ill.

A.A.H.A. Golf Tournament.—The A.A.H.A. will hold a golf tournament at the Seaview Country Club during their meeting at Atlantic City May 2-5, 1951. Prospective participants should notify W. C. Ready, 4615 41st st., N.W., Washington, D.C.

s/R. E. RUGGLES

Report of Meeting of Executive Committee of AVMA Emergency Advisory Committee

The Executive Committee of the AVMA Emergency Advisory Committee met in the central office on March 17 and 18. Members present were Drs. W. R. Krill, J. T. Schwab, C. D. Van Houweling, and Asa Winter. Others meeting with the Committee were: Drs. M. R. Clarkson, C. H. Hays, A. G. Misener, and Executive Secretary J. G. Hardenbergh.

Matters considered and actions taken were:

1) Items of the report of the veterinary section of the meeting of state advisory committees to Selective Service (reported in the February, 1951, JOURNAL, p. 126) receiving special attention were: (1) Dr. Winter is to determine what action has been taken relative to adding veterinarians to the state advisory committees to Selective Service. (2) A letter from Dr. Richard L. Meiling, chairman, Armed Forces Medical Policy Council of Department of Defense, has assured the AVMA that when it becomes necessary to call veterinarians to active duty without their consent that the same procedure now being followed for physicians and dentists will be followed for veterinarians. (3) The secretary was instructed to again ask the National Advisory Committee and Dr. Meiling to consider carefully the fourth and fifth recommendations of the veterinary section's report relative to the rotation of officers and the utilization of graduates, who are not veterans, in the Veterinary Corps immediately after graduation.

2) A letter is being sent to the chairmen of the state emergency advisory committees relative to registrants who are classified 1-A applying for reserve commissions which will reiterate the statements published in the February and March JOURNALS (p. 124 and 193, respectively).

3) The publication of articles in the JOURNAL pertaining to atomic attacks and biologic warfare were approved.

4) A final listing of the occupational specialties and definitions was approved and will be submitted to Dr. Winter for inclusion in the Dictionary of Occupational Titles.

5) Recent correspondence indicates that a veterinarian may be asked to serve on the National Advisory Committee, and the secretary was instructed to pursue this matter.

6) After detailed study of statistics relative to the need for veterinarians and the number of graduates there will be during the next few years, the committee went on record as opposing accelerated curriculums for colleges of veterinary medicine.

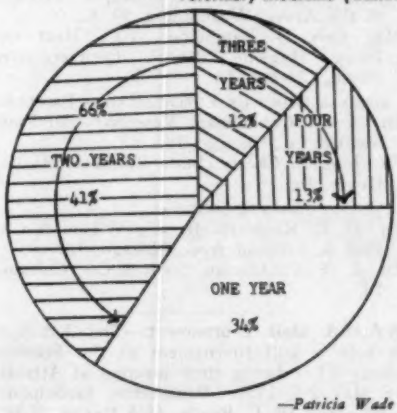
7) Data accumulated relative to the preprofessional education of students in schools of veterinary medicine revealed that most students have more than the minimum requirements for admission (*see* charts 1 and 2).

This data will be disseminated to all who may be able to assist in having the entrance rank of veterinarians entering the Veterinary Corps immediately after graduation raised to first lieutenant.

8) Chairman Krill announced that he was recently notified that his appointment to the Healing Arts Educational Advisory Committee to Selective Service has been extended.

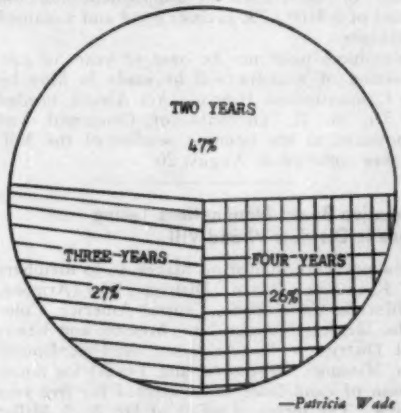
9) Drs. Clarkson and Krill reported that the purposes of the recent regional civil defense meeting were: (1) to define the key position of responsibility the state veterinarian occupies

Charts 1 and 2—Preprofessional College Education of Students Entering Four-Year Course in Veterinary Medicine (United States, 1947-1948 and 1949-1950)



—*Patricia Wade*

Chart 1—Students admitted in 1947-1948.



—*Patricia Wade*

Chart 2—Students admitted in 1949-1950.

relative to defense against biologic attacks against animals; (2) to outline the procedures to be followed in the event of outbreaks of exotic diseases; and (3) to encourage state and federal disease-control officials to enlist the coöperation of the veterinarians and livestock interests in the states.

10) The Committee authorized a letter to the chairmen of the state emergency advisory committees recommending that the state committees work closely with the state veterinarians and the civil defense councils on all matters pertaining to civil defense.

National Live Stock Loss Prevention Board

It was reported at the sixteenth annual meeting of the National Live Stock Loss Prevention Board in Chicago on Feb. 27-28, 1951, that livestock producers and feeders of this country pay an estimated annual charge of $33,000,000 because of preventable losses due to bruised, crippled, and killed livestock in the normal marketing and processing channels. A large percentage of these losses are due to careless handling or inadequate care and equipment. Various groups including veterinarians, truckers, meat packers, railroad representatives, and feeders reported on proposed measures to prevent unnecessary losses. Their reports served as the basis for development of a comprehensive program for the year ahead with definite responsibilities assigned to the organized groups within each segment of the industry.

Livestock Conservation, Inc.

The National Livestock Loss Prevention Board and the Livestock Sanitary Committee were consolidated March 1, 1951, and henceforth will be known as Livestock Conservation, Inc. The new agency will have offices in the Livestock Exchange, Union Stockyards, Chicago, and will be governed by a 45-man board of leaders from all segments of the livestock and meat industry and allied service organizations. Dr. J. R. Pickard, general manager of both the loss prevention board and the sanitary committee, will be general manager of the new organization.

The board elected Thomas E. Wilson, chairman of the board of Wilson and Co., Inc., Chicago, president; Walter Netsch, vice-president of Armour and Company, Chicago, and George Silknetter, president of Sioux City Union Stockyards Co., vice-presidents; Dr. W. A. Young, general manager of the Anti-Cruelty Society, Chicago, secretary; and Fred Hatch, president of the Chicago Livestock Exchange, treasurer.

The following will serve on the executive committee: William W. Prince, president of Union Stockyards and Transit Co., Chicago; Cliff Kaney, president of the Kansas City Livestock Exchange; Frank Knutzen, Swift & Company; Wilbur H. Coultas, American Meat Institute; H. H. Kildee, former dean of the College of Agriculture, Iowa State College, Ames; Herman C. Aaberg, American Farm Bureau Federation; Dr. Fred O'Flaherty, Tanners Council of America, Cincinnati; Dr. W. J. Embree, secretary, Livestock Loss Prevention Association of Ohio; Eldon Miller, livestock truck operator, Iowa City; and Ray Burke, livestock agent, Chicago, Burlington, and Quincy Railroad Co.

Principal attention will be given losses from disease, parasites, and injuries on farms and in the marketing process.

Dr. Schnelle, Veterinarian of the Year

Dr. Gerry B. Schnelle (UP '26), Boston, Mass., was voted veterinarian of the year (1950), in a national poll conducted by the Gaines Dog Research Center of New York, for his research in the field of geriatrics and his unselfish devotion to his profession. Dr. Schnelle was given a "Fido," dogdom's equivalent to Hollywood's "Oscar," at ceremonies held at the New York Athletic Club, Feb. 13, 1951, in connection with the Westminster Kennel Club dog show activities.

Dr. Gerry B. Schnelle (right) receives his Fido from Mr. Harry Miller, director of the Gaines Dog Research Center.

Dr. Schnelle was recently appointed chief of staff of the Angell Memorial Animal Hospital in Boston.

American College of Veterinary Pathologists To Conduct Examination

The American College of Veterinary Pathologists will conduct an examination during the week of the annual meeting of the American Veterinary Medical Association in Milwaukee, Aug. 20-23, 1951. Those who desire to be certified for membership in the American College of Veterinary Pathology should apply to

the secretary before June 1 for the necessary application forms. The completed forms must be returned to the secretary by June 15, 1951, accompanied by the examination fee of $25. In the event that the applicant's credentials are not accepted, the examination fee will be returned. The secretary is Dr. W. T. S. Thorp, National Institutes of Health, Bethesda, Md.

Official Track Veterinarians Organize

Dr. J. G. Catlett, Miami, Fla., is the chairman of the committee of state chief veterinarians working with the National Association of State Racing Commissioners. The secretary of this newly organized group of veterinarians interested in racing is Dr. James Stewart of Maryland. The committee presented ten recommendations for consideration of the racing commissioners at their meeting in Miami Beach, Fla., Jan. 22-25, 1951.

Dr. James Farquharson, of Colorado, past president of the AVMA, is a member of the committee on uniform rules and procedures of the N.A.S.R.C.

Federal Veterinarians.—Dr. L. T. Hopkins, Kansas City, Mo., is the new secretary-treasurer of the National Association of Federal Veterinarians. Applicants for membership to the AVMA desiring to avail themselves of constituent membership in the N.A.F.V., should have such membership verified by Dr. L. T. Hopkins, 5837 Highland Ave., Kansas City 4, Mo.

s/E. C. CANNON.

STUDENT CHAPTER ACTIVITIES

Students may obtain the "Proceedings Book" (1950 AVMA annual meeting, Miami Beach) from the AVMA office, 600 S. Michigan Ave., Chicago 5, Ill., for $2 per copy.

Alabama Chapter.—On Jan. 9, 1951, **Judge Sidney Cook**, Auburn, addressed the Alabama Polytechnic Institute Student Chapter of the AVMA on legal problems confronting newly graduated veterinarians. **Mr. Earl Kennamer**, Alabama Extension Service, discussed wildlife at the January 23 meeting; and on February 6, **Dr. M. K. Heath**, Birmingham, spoke on the problems of general practice.

s/WILFRED R. HARPER, *Secretary*.

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Georgia Chapter.—Officers nominated at the Jan. 8, 1951, meeting and elected on January 22 are Charles E. Lee, president; Bill Rhodes, president-elect; Dan Strickland, vice-president; G. V. McCranie, treasurer; Jack Shirley, secretary; and William Justice, corresponding secretary. **Major Prince** discussed the status of reservists and nonreservists at the January 22 meeting. On February 10, the Chapter held its annual formal dance which was well attended.

s/WILLIAM JUSTICE, *Corresponding Secretary*.

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Iowa Chapter.—Officers of the Iowa State College Student Chapter of the AVMA are John Bricker, president; Fred Hussman and Roland Bunge, vice-presidents; Gordon Esbeck, secretary; and M. Wright, critic.

s/NAM Y. CHUNG, *Retiring Secretary*.

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Lyn Twitchell, Eagle Harbor, Mich., junior in the School of Veterinary Medicine, Michigan State College, and also captain of the Michigan State College fencing team, has again captured the state invitational championship by winning the tournament in Detroit.

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Cornell Chapter.—At a recent meeting of the New York State (Cornell University) Student Chapter of the AVMA, the following officers were elected: Gerald Thorington, president; Charles Hall, vice-president; Louis Shor, secretary; Ellis Croshaw, treasurer. Retiring officers were: John S. Baker, president; Gerald Thorington, vice-president; L. William Goodman, secretary; Louis H. Jacobson, treasurer.

s/LOUIS SHOR, *Secretary*.

WOMEN'S AUXILIARY

Mrs. Rife, Treasurer of the AVMA.—Mrs. Charles C. Rife, 420 Edgewood Ave., N.E., Atlanta, Ga., was born in Alabama and raised in Atlanta where she attended the Southern Business University. Shortly after graduation, she and Dr. Charles C. Rife were married and since their two daughters have been old enough to require less attention, she has managed the office for her husband.

Mrs. Rife has served as president of the parent-teacher's association, as treasurer for the East Lake Garden Club for four terms, and is a charter member of the East Lake Civic

Mrs. Charles C. Rife

Club. She helped organize, and was the first president of, the Atlanta Opti-Mrs. Club, an auxiliary to the Atlanta Optimist Club, an international organization. During the war, she was co-chairman with Dr. Rife for the Community Fund and Red Cross drives for the East Lake section of Atlanta. She has also been active in the veterinary field, having served on a number of committees on local arrangements; helped organize, and served as first president of, both the Women's Auxiliary to the Georgia Veterinary Medical Association and the Southern Veterinary Medical Association. In 1949, Mrs. Rife served as chairman of the Women's Auxiliary House of Representatives, and in 1950, she was elected treasurer of the Auxiliary.

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Alabama Auxiliary.—The annual meeting of the Women's Auxiliary to the Alabama Veterinary Medical Association was held at the Whitley Hotel in Montgomery, Feb. 16-17, 1951, with 66 members in attendance. Members of the Women's Auxiliary to the Alabama Student Chapter of the AVMA attended the annual breakfast and business meeting and Mrs. Helen Morgan, president of the student auxiliary, gave an interesting report of their activities. Mrs. B. N. Lauderdale reported on the Miami Beech meeting, and Mrs. C. H. Poitevint, president, outlined the progress the auxiliary has made. Newly elected officers are: Mrs. M. L. Crawford, Marion, president; Mrs. J. B. Taylor, Enterprise, vice-president; Mrs. E. E. Williams, Montgomery, secretary-treasurer; and Mrs. I. S. McAdory, delegate to the Auxiliary House of Representatives. Mrs. Dennis Coughlin, and Mrs. C. E. Bild, president and president-elect, respectively, of the national Auxiliary, were guests at this meeting.

s/MRS. E. E. WILLIAMS, *Secretary.*

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Colorado Auxiliary.—The winter meeting of the Women's Auxiliary to the Colorado Veterinary Medical Association was held at Fort Collins at the time of the meeting of the state association and the short course, Feb. 20-21, 1951. On the first day, there was a get-acquainted luncheon; the next day, at the business meeting, a new constitution and by-laws were adopted; on the last day, the Women's Auxiliary to the Colorado A. & M. Student Chapter of the AVMA entertained the group.

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Illinois Auxiliary.—The ninth annual meeting of the Auxiliary to the Illinois Veterinary Medical Association was held at the Sherman Hotel, Jan. 30-Feb. 1, 1951, with 180 members in attendance. The women were invited to the opening session of the state association and Mrs. C. M. Rodgers, president, presented greetings of the Auxiliary at the session. The women also enjoyed the talk on "The Psychology of Client Relations" presented by Dr. Kenneth Haas, Sr., at the opening session.

The social calendar included a smorgasbord, a style show, shopping, sight-seeing, and the annual banquet.

Officers for 1951 are: Mrs. Olof Norling-Christensen, Wilmette, president; Mrs. W. G. Radabaugh, Piper City, vice-president; Mrs. Thomas Wise, Effingham, secretary; and Mrs. G. C. Poppenhouse, Milledgeville, treasurer.

s/MRS. L. E. JOHNSON.

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Michiana Auxiliary.—The March 8 meeting of the Women's Auxiliary to the Michiana Veterinary Medical Association was held at the Hotel LaSalle in South Bend.

At the business session, the program committee chairman, Mrs. Roy D. Wescott, reported on the programs for the coming year, and Mrs. D. D. Ramsey, chairman of the Ways and Means Committee, presented a money-making project for the future.

Officers for 1951 are Mrs. J. J. Fishler, Elkhart, Ind., president; Mrs. Roy D. Westcott, Constantine, Mich., vice-president; Mrs. D. L. Miller, Middlebury, Ind., secretary; Mrs. J. M. Shellenberger, Mishawaka, Ind., treasurer.

Several films on cancer were shown by a representative of the American Cancer Society.

s/MRS. D. L. MILLER, *Secretary.*

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Mississippi Auxiliary.—There were 55 members (including 14 new ones) present at the annual meeting of the Women's Auxiliary to

the Mississippi Veterinary Medical Association at the Edwards Hotel in Jackson on Jan. 19-20, 1951. Officers elected at this meeting are: Mrs. Sam A. Cox, Jackson, president; Mrs. Glenn Gates, Clarksdale, vice-president; and Mrs. Ben S. Huston, Laurel, secretary-treasurer. Mrs. Vernon Chadwick, Jackson, was appointed delegate to the House of Representatives of the national Auxiliary.

s/MRS. BEN S. HUSTON, *Secretary.*

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New Jersey State Auxiliary.—The Women's Auxiliary to the New Jersey State Veterinary Medical Association convened at the Hotel Hildebrect in Trenton on Feb. 8, 1951. After luncheon, there was a fashion show by the Yardley Fashion Shop, and members of the Auxiliary were the models.

At the business meeting, plans were discussed for the annual theater party to be held during the summer meeting. The following new officers were elected: Mrs. James Savage, Allamuchy, president; Mrs. G. H. Kimnach, Hightstown, first vice-president; Mrs. Russell Edmonds, Princeton, second vice-president; Mrs. Arthur F. North, Somerville, secretary; and Mrs. Joseph Engle, Short Hills, treasurer.

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Southeastern Michigan Auxiliary.—The March meeting of the Women's Auxiliary to the Southeastern Michigan Veterinary Medical Association was held in the Herman Kiefer Hospital, Detroit. The 27 members present enjoyed bridge and canasta. Mrs. Ivan Wood, entertainment chairman, outlined an interesting series of programs for the coming year. The officers for 1951 are Mrs. Gilbert Meyer, president; Mrs. E. Emery, vice-president; Mrs. F. D. Egan, secretary; Mrs. H. Viergutz, recording secretary; and Mrs. G. Eastman, treasurer.

s/MRS. P. J. KELLY, *Publicity Chairman.*

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West Virginia Auxiliary.—The Women's Auxiliary to the West Virginia Veterinary Medical Association met at the Greenbriar Hotel in White Sulphur Springs on Feb. 12, 1951. After the business meeting, over which the president, Mrs. Frank Hale, presided, members viewed an exhibition of pottery made from local clays. Members and their husbands enjoyed a banquet in the Lee Room in the evening.

s/MRS. W. E. TRUSSELL, *Secretary.*

APPLICATIONS

The listing of applicants conforms to the requirements of the Administrative By-Laws—Article X.

First Listing

BAKER, EDWARD
568 Grand Ave., Englewood, N. J.
V.M.D., University of Pennsylvania, 1948.
Voucher: J. R. Porteus.

BENDIX, WILMER L.
R.F.D. 13, Richmond 20, Va.
B.V.Sc., Ontario Veterinary College, 1928.
Voucher: Harry K. Royer.

BORRE, OLUF
309 Huron Ave., Spring Valley, Minn.
D.V.M., Royal Veterinary College of Copenhagen, 1943.
Voucher: B. S. Pomeroy.

CONNEL, ALLAN A., JR.
Box 23, Stillwater, Minn.
D.V.M., Ontario Veterinary College, 1938.
Voucher: B. S. Pomeroy.

DICKSON, HOWARD S.
23 Second St., Delhi, N. Y.
D.V.M., New York State Veterinary College, 1935.
Voucher: J. J. Regan.

ENGE, CLIFFORD O.
St. James, Minn.
D.V.M., Texas A. & M. College, 1939.
Voucher: B. S. Pomeroy.

FRANK, B. N.
Box 1083, Sterling, Colo.
D.V.M., Colorado A. & M. College, 1939.
Voucher: Jo Browne.

HALL, EMERY A.
204 2nd St., N.E., Little Falls, Minn.
M.D.V., McKillip Veterinary College, 1910.
Voucher: B. S. Pomeroy.

HENRY, JOHN F.
2230 Hillside Ave., St. Paul 8, Minn.
V.M.D., University of Pennsylvania, 1950.
Voucher: B. S. Pomeroy.

KLEAVELAND, RODNEY C.
Sioux Rapids, Iowa.
D.V.M., Iowa State College, 1944.
Voucher: F. B. Young.

MAXON, FAY I.
Fairview Farms, Avon, Conn.
D.V.M., Ontario Veterinary College, 1907.
Voucher: E. H. Patchen.

NAUMYK, FRANZ M.
2812 Jackson St., Dubuque, Iowa.
D.V.M., Veterinary Academy of Lwow, Poland, 1934.
Voucher: L. T. Hopkins.

PEARSON, KERMIT C.
1151 Schley, Butte, Mont.
D.V.M., State College of Washington, 1949.
Voucher: E. A. Tunnicliff.

PETER, NORMAN H.
244 Neil Ave., East Kildonan, Man.
D.V.M., Ontario Veterinary College, 1937.
Voucher: G. A. Edge.

ROWAN, ROBERT L.
Linn, Mo.
V.M.D., University of Pennsylvania, 1946.
Voucher: J. L. Wells.

SMITH, GEORGE K.
Asheville Highway, Spartanburg, S. Car.
D.V.M., Alabama Polytechnic Institute, 1941.
Voucher: R. A. Mays.

Second Listing

ANDERSON, EUGENE E., 111 Blackburn St., Ripon, Wis.
CHAMBERS, JAMES L., Box 61, Eufaula, Ala.
CONNOR, EDWARD C., 113 W. North St., Morris, Ill.
CULVER, SYLVAN D., 115 Cox St., Auburn, Ala.
DEAN, GILBERT F., Box 18, LaCenter, Ky.
DIEHL, ERWIN D., Kintnersville, Pa.
DUCKWORTH, JAMES V., 4516 8th St., Meridian, Miss.
ELLGEN, WALTER F., Ivanhoe, Minn.
EVANS, JOHN JAMES, 425 Milledge Road, Augusta, Ga.
FANNING, JAMES J., 642-A Hale St., Beverly Farms, Mass.
FOGG, DONALD E., Box 33, Dagsboro, Del.
GAUNT, DAVID G., Gen. Del., South Edmonton, Alta.
GOLDMAN, CARLOS, P.O. Box 1312, Caracas, Venezuela.
JOHNSON, WALTER F., 2025 Magnolia Ave., Janesville, Wis.
JONES, GEORGE W., 140 Birmingham Highway, Prattville, Ala.
LYDAY, JAMES M., 1421 Henry Ave., Des Plaines, Ill.
MAGILTON, JAMES H., 1210 6th St., David City, Neb.
MORRISON, ROBERT K., 3007 E. Main St., Danville, Ill.
O'DONNELL, F. C., Strawberry Point, Iowa.
PRAVITZ, SAUL, 2011 Lincoln Ave., Chicago, Ill.
ROSS, CHARLES P., Bel Air, Md.
SELBY, STEPHEN A., 3264 P St., Washington, D. C.
SHIPSIDES, STANLEY H., 206 Birch St., Wauseon, Ohio.
TRACE, JAMES C., 244 Sherborne Dr., Columbus, Ohio.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of Jan. 26, 1951.

NEW APPOINTMENTS

STEFAN ARTYMOWSKI, Chicago, Ill.
PERCIVAL G. BARBER, Providence, R. I.
THOMAS B. BURRIS, New Haven, Conn.
KENNETH J. FELDMAN, New York City.
NORMAN D. KETOVER, Springfield, Mass.
BOHDAN KONDRA, Reading, Pa.
SIDNEY L. MILLMAN, Philadelphia, Pa.
FRANZ M. NAUMYK, Dubuque, Iowa.
DEAN I. NEWTON, Kansas City, Kan.
S. HERMAN PARKER, Chicago, Ill.
MONTGOMERY A. TEGG, Cleveland, Ohio.
LLOYD F. VAN GORDER, Baltimore, Md.
JOHN W. WEINHOFER, Chicago, Ill.
HAL D. WHITE, Olympia, Wash.
VARLEY F. YOUNG, Des Moines, Iowa.

RESIGNATIONS

HARRY GORFIEN, Mexico City, Mex.
SAMUEL H. HOFFER, Kingston, N. Y.
RAYMOND M. PARKER, Helena, Mont.

TRANSFERS

JOHN B. HEALY, from Beltsville, Md., to Columbus, Ohio.

CANCELLATION

CHARLES D. STUMPFF, Kansas City, Kan.

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Further Changes.—The following changes are reported as of March 9, 1951.

NEW APPOINTMENTS

ERNEST D. BARROWS, Cheyenne, Wyo.
EDGAR M. CLARK, El Paso, Texas.
HUGHIE G. DUNNE, St. Paul, Minn.
EDWIN ELIOT, Mexico City, Mex.
ROBERT B. GAFFORD, Atlanta, Ga.
RENE C. GNADE, Madison, Wis.
FREDERICK C. GREEN, Albany, N. Y.
WILLIAM B. GULDENSCHUH, New York, N. Y.
ROY F. HESS, Des Moines, Iowa.
PIERCE A. HUMBLE, Albuquerque, N. M.
TADEUSZ P. KOLODYNSKI, Boston, Mass.
RALPH F. KOUSTMER, Cincinnati, Ohio.
STEPHAN KURYLAS, Baltimore, Md.
ROBERT D. LAMSER, Mexico City, Mex.
BERNARD LEHMAN, Newark, N. J.
ERIC W. LINDER, Spokane, Wash.
DANIEL MABEL, Providence, R.I.
AFFLECK J. MacGILVRAY, Fort Worth, Texas.
FIDEL MATA ORIONEZ, Mexico City, Mex.
GEORGE W. MORELAND, Fort Worth, Texas.
EDWARD F. OTTO, Newark, N. J.
W. C. PATTERSON, JR., Beltsville, Md.
THEODORE PICKETT, Kansas City, Kan.
WOLODYMYR POMIRKO, Chicago, Ill.
LOWELL L. SPRUIELL, Mexico City, Mex.
SANFORD B. WILSON, St. Paul, Minn.

RESIGNATIONS

JOHN F. BOSWELL, Chicago, Ill.
CLARENCE BRITTELL, Los Angeles, Calif.
GUY E. CHESLEY, Boston, Mass.
ROY B. CONAWAY, Des Moines, Iowa.
WILLIAM B. COUGHLAN, Phoenix, Ariz.
JIM G. FILSON, Cleveland, Ohio.
WILLIAM S. FORD, Chicago, Ill.
JOSEPH A. S. MILLER, Trenton, N. J.
MONTGOMERY A. TEGG, Cleveland, Ohio.
GLEN F. PATTON, Omaha, Neb.
ROBERT H. WILLIAMS, Mexico City, Mex.

SEPARATED (MILITARY SERVICE)

DOUGLAS F. MOE, Mexico City, Mex.
TINY S. THOMPSON, Kansas City, Kan.

RETIREMENTS

EDWARD J. CALPH, South St. Paul, Minn.
FRANK L. FOSTER, Los Angeles, Calif.
RAY GASKILL, Bismarck, N. Dak.
CHARLES A. HAZZARD, Newark, N. J.
ELMER LASH, Olympia, Wash.
DANIEL F. McCARTHY, St. Louis, Mo.
ARTHUR McCONNELL, Pittston, Pa.
LYNN H. MEAD, Providence, R. I.
RALPH V. PILGRIM, San Antonio, Texas.
JOHN REDMOND, El Paso, Texas.
BIJAH W. TAYLOR, Knoxville, Tenn.
JOHN A. THOMPSON, Spokane, Wash.
FRANK M. WELCH, Montgomery, Ala.
HARRY W. WILLIS, Jacksonville, Fla.

TRANSFERS

JAMES L. HOURRIGAN, from Mexico City, Mex., to El Paso, Texas.
HENRY T. JUEN, El Paso, Texas (MI to I&Q).

AUBREY G. ROBINSON, from Mexico City, Mex., to Jackson, Miss.
B. CONWELL SWINDLE, from Beltsville, Md., to Jacksonville, Fla.

CANCELLATION

DEAN I. NEWTON, Kansas City, Kan.

MILITARY FURLOUGHS

JOHN J. GARVEY, Augusta, Maine.
HARRISON S. MARTIN, Mexico City, Mex.
HARRY B. MITCHELL, Salt Lake City, Utah.
JAMES E. PECK, Kansas City, Kan.
KENNETH E. TAYLOR, Omaha, Neb.

AMONG THE STATES AND PROVINCES

Alabama

State Association Resolutions.—At its annual meeting at Montgomery, Feb. 17, 1951, the Alabama Veterinary Medical Association adopted resolutions on hog cholera eradication and for separate office for state veterinarian. As the law now stands, the dean of the School of Veterinary Medicine must also serve as state veterinarian.

s/I. S. McADORY, *Secretary.*

Arkansas

Protests Discrimination.—Dr. George T. Dugan of Texarkana, Ark., recently wrote U. S. Congressman Boyd Tackett protesting the discriminatory provision of the law which does not give veterinarians the $100-a-month bonus pay for volunteering for military service which physicians and dentists receive. Dr. Dugan sent a copy of his good letter to the AVMA office with the pertinent suggestion that other veterinarians follow his example and write to their congressmen and senators. His suggestion is a good one and other members could well act upon his suggestion.

California

Bay Counties Association Officers.—Current officers of the Bay Counties Veterinary Medical Association are Drs. William W. Brimer, Alameda, president; Russell P. Cope, Berkeley, vice-president; and Howard F. Carroll, San Francisco, secretary.

s/HOWARD F. CARROLL, *Secretary.*

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Veterinarians Needed.—The California State Department of Agriculture plans to fill 20 positions from the currently scheduled merit system examination for veterinarian. These positions, open to veterinarians throughout the United States, are in the fields of livestock and poultry disease control and meat inspection. They present a particularly attractive opportunity to recent graduates and students in their senior year, since previous experience is not required.

A forty-hour week, paid vacation and sick leave, and liberal retirement benefits are some of the advantages offered. The salary range is $376-458.

For further information and application forms, write the State Personnel Board, 1015 L Street, Sacramento, Calif. Applications must not be postmarked later than May 26.

s/JOHN F. FISHER, *Executive Officer.*

Colorado

Roundup Riders of the Rockies.—That some veterinarians still look at a horse on occasion is evidenced by the accompanying picture taken during a 200-mile trail ride in Colorado in July, 1950. All are members of the Roundup Riders of the Rockies, a group of some 80 Colorado and other western state business men who converge on Denver each summer for an eight-day mounted trek back into the rough country and high trails of the Rockies. Dr. G. H. Gilbert (COL '41) Arvada, and Major Harry A Gorman (COL '39), served as official veterinarians for the ride and Col. Wayne O. Kester (KSC '31) as trail horse judge.

Left to right—Major Harry A. Gorman, Lowry Air Force Base veterinarian; Dr. G. H. Gilbert, Arvada, practitioner and president of the Colorado Veterinary Medical Association; Monte Montana, world champion rodeo trick rider and roper and movie star; Dick Dixon, west coast theater executive and movie producer; and Colonel Wayne O. Kester, chief, U. S. Air Force Veterinary Corps.

s/W. O. KESTER.

Connecticut

State Association.—Sixty-one members and several guests attended the annual meeting of the Connecticut Veterinary Medical Association at the Hotel Bond in Hartford on Feb. 7, 1951. **Dr. E. H. Patchen,** Milford, discussed "Workings of the AVMA Emergency Advisory Committee and Status of the Veterinarian under Selective Service and Civil Defense."

The following officers were elected for the ensuing year: Drs. Howard C. Raven, Bridgeport, president; William R. Leggett, Westport,

first vice-president; Alvin R. MacDonald, Bloomfield, second vice-president; and Ernest H. Patchen, Milford, secretary-treasurer. Drs. James A. Edgett, Hartford; Richard T. Gilyard, Waterbury; Howard C. Raven; William R. Leggett; Jean V. Smith, Hartford; and Ernest H. Patchen were elected to the Executive Board. The following members were elected to the Board of Censors: Drs. Raymond E. Larson, Newington; George H. Ludins, Hartford; John P. McIntosh, Kensington; Walter B. Holcomb, Danbury; Raymond B. Church, Winsted.

s/NIEL W. PIEPER, *Resident Secretary.*

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Fairfield County Association.—The regular meeting of the Fairfield County Veterinary Medical Association was held at the Chimney Corners Inn, Stamford, on March 14. **Dr. C. E. DeCamp,** Pitman-Moore Company, discussed "Leptospirosis in Dogs."

s/WILLIAM R. LEGGETT, *Secretary.*

Hawaii

Annual Meeting.—The Hawaii Veterinary Medical Association met in Honolulu on Feb. 10-11, 1951. Speakers included **Drs. E. H. Willers, A. H. Julien,** and **Wm. F. Parker,** all of Honolulu; **G. C. Folger,** Kuanakakai, Molokai; **John M. Hendershot,** Kahului, Maui; **Robert Cross,** and **Mr. Hal Cammann.** The following films were shown: "Outbreak," "Medical Effects of Atomic Explosion, Part I," "Veterinary Service with Army Animals, Part II, Evacuation and Treatment of Animal Casualties."

Officers elected at this meeting are Drs. W. F. Parker, president; G. C. Folger, vice-president; and Paul Nomura, Honolulu, secretary-treasurer.

s/WILSON M. PANG, *Resident Secretary.*

Illinois

Dr. McLean Joins University Staff.—Dr. Angus F. McLean (ONT '50) has joined the staff of the University of Illinois College of Veterinary Medicine as an instructor in veterinary clinical medicine. Dr. McLean served with the Royal Canadian Air Force from 1943 to 1945 and has practiced near Toronto since receiving his D.V.M. degree. He is a member of the Ontario Veterinary Association and Omega Tau Sigma fraternity.

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Chicago Association.—The Chicago Veterinary Medical Association met in the Palmer House on March 13. Program speakers were **Drs. Robert J. Cyrog, John M. Gillispie, Joseph R. Robb, Edward C. Saunders,** and **Charles B. Krone. Dr. Krone** was also moderator of a symposium on fracture fixation.

s/ROBERT C. GLOVER, *Secretary.*

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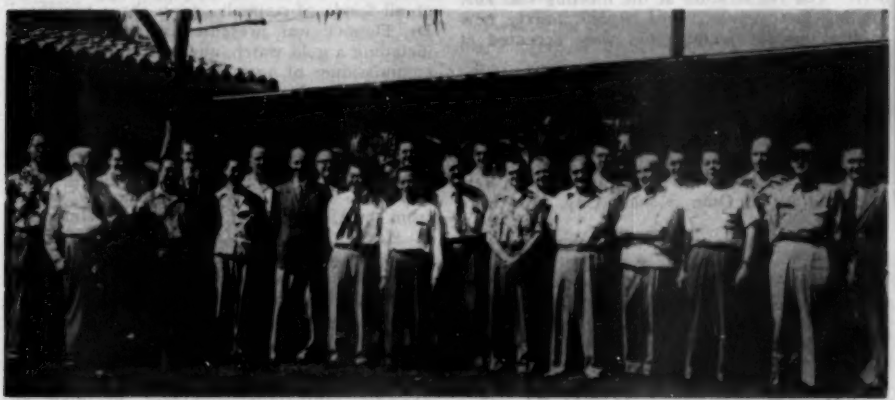
Bushman Dies of Heart Attack.—Bushman, World famous gorilla of the Lincoln Park Zoo in Chicago, was found dead of a heart attack in his cage, Jan. 1, 1951. The 22-year-old gorilla was the oldest and largest of his kind in captivity and was a feature attraction of the zoo. He had been captured in the French Cameroons of West Africa in 1928 and arrived at the zoo at the age of 2 years and weighing 38 lb.; he grew to be 6 ft. 2 in. tall and weighed 550 lb. He had been in ill health since June, 1950.



Left to right—Drs. Donald Wong, J. C. Fitzgerald, John Gootch, Roy Nagakura, Robert Cross, Roy Harada, Leslie Weight, James Wight, L. N. Case, Paul Nomura, Joseph Sample, Wilson Pang, Mr. Hal Cammann, Drs. William Parker, Rex Glaisyer, Lt. Col. Couch, Dr. Robert Morrison, Captain Mowbray, Drs. A. H. Julien, G. C. Folger, Ernest Willers, Major Connell, Dr. Jack Hendershot, and Major Bixby.

Drs. Wesley A. Young, managing director of the Anti-Cruelty Society, Lester Fisher, head of the zoo veterinary staff, and specialists from the University of Chicago conducted the autopsy and made tests of tissues taken from the gorilla. His body will be stuffed and exhibited at the Field Museum of Natural History in Chicago.

Indiana

Sixth District Association.—The Sixth District (Indiana) Veterinary Medical Association met in Lebanon, March 14, 1951. **Dr. Wisehart,** M.D., told of his experiences when he was stationed with the U.S. Army in Russia during the war. Dr. and Mrs. R. W. Harden, Lebanon, were host and hostess.

s/J. L. KIXMILLER, *Resident Secretary.*

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Tenth District Association.—At the meeting of the Tenth District (Indiana) Veterinary Medical Association on March 15 at the Idlewild Country Club in Pendleton, **Dr. L. M. Hutchings,** Purdue University, spoke on "Enteritis in Pigs." Dr. and Mrs. H. F. Mingle, Pendleton, served as host and hostess for the group.

s/J. L. KIXMILLER, *Resident Secretary.*

Iowa

State Association.—Officers elected at the annual meeting of the Iowa Veterinary Medical Association, Jan. 17-19, 1951, were Drs. C. D. Lee, Ames, president; Lester Proctor, Oelwein, president-elect; H. E. Hanna, Springville, first vice-president; F. E. Brutsman, Traer, second vice-president; F. B. Young, secretary-treasurer. The registration at the meeting was 705, topping last year's record of 587. Sixty new applications for membership were accepted at the meeting.

s/F. B. YOUNG, *Secretary.*

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East Central Society.—At a dinner meeting of the East Central Iowa Veterinary Medical Society in the Hotel Montrose, Cedar Rapids, on March 8, **Drs. John B. Bryant,** Mount Vernon, and **A. H. Quin,** Kansas City, Mo., were guest speakers.

s/WAYNE H. THOMPSON, *Secretary.*

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Interstate Association.—Problems of tuberculosis common to veterinary and human medicine were discussed at the annual joint meeting of the Interstate Veterinary Medical Association and the Woodbury County Medical Society in Sioux City, in March. **Drs. A. G. Karlson,** Mayo Foundation for Medical Education, Rochester, Minn.; and **Charles W. Gray,** M.D., state sanitorium Oakdale, Iowa, were guest speakers. Drs. H. C. Smith and E. G. Cole represented the veterinary association on the local arrangements committee.

Kentucky

Dr. Dimock Honored.—Dr. W. W. Dimock (COR '05), professor emeritus at the University of Kentucky Experiment Station, where he was for several years head of the Department of Animal Pathology, was honored March 26

Dr. W. W. Dimock

at a testimonial dinner in Lexington. Among the 250 guests who attended the dinner were horse breeders, dairymen, poultry raisers, swine breeders, veterinarians, and other men with whom he had worked throughout the years. Said the *Courier-Journal,* Louisville, Ky., "There probably never was such a collection under one roof before as this gathering at the LaFayette Hotel. Love of a man, and above all, respect for a man who has done so much for breeders of all kinds of animals, drew them together." Dr. Dimock was presented with several gifts, including a gold watch, and Mr. Harry Walters, commissioner of agriculture, representing Governor Wetherby, presented him with a Kentucky colonel's commission.

After receiving his D.V.M. degree, Dr. Dimock spent four years in Cuba as investigator of animal diseases and veterinarian to the National Board of Health. He holds honorary degrees from the University of Cuba and the University of Havana. In 1909, he became professor of pathology at Iowa State College at Ames and ten years later was appointed head of the Department of Animal Pathology at the University of Kentucky, which has become an internationally known center for the study of diseases of the horse.

Dr. Dimock has done outstanding work on periodic ophthalmia, wobblers, breeding hygiene, and parasites of horses, as well as diseases of cattle, hogs, sheep, and poultry. As important as his own accomplishments has been Dr. Dimock's influence on his students and the men with whom he worked, many of whom

have already contributed valuable information to the livestock industry.

s/T. J. STEARNS.

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Regional Education Plan.—The South's regional education plan is making it possible for 12 Kentuckians to become veterinarians. Ten students will attend Alabama Polytechnic Institute at Auburn, and two will go to Tuskegee Institute. The emergency fund of the government of Kentucky is furnishing the $12,000 for the 12 scholarships.

s/T. J. STEARNS.

Manitoba

Provincial Association.—The sixty-first annual convention of the Veterinary Association of Manitoba was held Feb. 27, 1951, in the Fort Garry Hotel, Winnipeg. Program speakers included **Drs. E. C. Chamberlayne,** Winnipeg; **J. W. Higginson,** Boissevain; **R. H. Lay,** Winnipeg; and **C. V. Barker,** Ontario Veterinary College, Guelph. The program featured a practitioner's forum of case reports on nitrate poisoning from well waters, ruptured liver in a dog, and postmortem examination of a cow.

Officers elected at this meeting are Drs. F. A. Hodge, Hamiota, president; W. Giesbrecht, Winnipeg, vice-president; E. J. Rigby, Winnipeg, secretary-treasurer. New council members are Drs. R. H. Lay, A. Savage, E. C. Chamberlayne, H. H. Ross.

s/R. H. LAY, *Resident Secretary.*

Massachusetts

State Association.—The regular monthly meeting of the Massachusetts Veterinary Association was held Feb. 28, 1951, at the Hotel Beaconsfield, Brookline. **Dr. Francis H. Fox,** New York State College of Veterinary Medicine, Cornell University, Ithaca, discussed "Experiences in the Large Animal Ambulatory Clinic at Cornell University." Association officers for 1951 are Drs. W. E. Merrill, Lowell, president; E. W. Johansen, Somerville, first vice-president; E. J. Welch, New Bedford, second vice-president; and C. L. Blakely, Boston, secretary-treasurer. The following members, who have been in practice for fifty years or more, were elected to honorary membership: Drs. Chester Blakely, Lexington; William Buckley, D. W. Gilbert, L. A. Paquin, H. W. Peirce, M. H. Williams, R. J. Dinsmore, H. D. Lambert, T. A. Parker, and J. H. Stimson. The following members who have been in practice slightly less than fifty years, but who have retired from active work, were by virtue of their long years in practice, as well as their active interest in the Association, likewise elected to honorary life membership: Drs. E. F. Schroeder, J. H. Meany, and H. H. Delano.

At the March 28 meeting of the Association, the films "Outbreak" (U. S. Government film), "Some Uses for Gelfoam in Veterinary Surgery" (Upjohn Co.), "The Physiology of Anoxia" and "Oxygen Therapy Procedures" (Linde Air Products Co.) were shown.

s/C. LAWRENCE BLAKELY, *Secretary.*

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Dr. Lentz Retires.—Dr. John B. Lentz (UP '14), head of the Veterinary Science Department at the University of Massachusetts, has retired after thirty-five years of service. He came to the University in 1916 and was named department head in 1927.

During World War I, Dr. Lentz served in the U. S. Army with the rank of lieutenant colonel. He returned to the University and became assistant professor of veterinary science in 1920. In 1922, Dr. Lentz was given the added title of college veterinarian. He is a member of the International Veterinary Congress, the Massachusetts Veterinary Association, the Massachusetts State Board of Registration in Veterinary Medicine, and of the AVMA.

New services developed at the University under Dr. Lentz include a diagnostic service for poultry diseases (1928), with a branch laboratory opened in October, 1950, at the Waltham Field Station, and a mastitis testing service for dairy cows (1947).

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New Veterinary Facilities at University.—Veterinary science facilities at the University of Massachusetts have outgrown their present quarters and the Department will take occupancy of a new half-million dollar animal pathology building during the summer of 1951.

Minnesota

Twin City Society.—The Twin City Veterinary Medical Society met at the veterinary clinic, University of Minnesota, St. Paul, on March 1. **Drs. W. A. Hagan,** dean, New York State Veterinary College, Ithaca; **J. Farquharson,** Colorado A. & M. College, Fort Collins; and **Wm. Aitken,** Merrill, Iowa, were guest speakers. Ninety veterinarians and guests attended the meeting.

s/B. S. POMEROY, *Secretary.*

Missouri

Microscopes Stolen.—Dr. J. E. Weinman, School of Veterinary Medicine, University of Missouri, has asked the coöperation of all veterinarians in helping him to recover a late model Leitz microscope, called the "Ortholux research scope," and a new stereoscopic dissecting microscope. The latter belongs to the University of Missouri and both were stolen from Dr. Weinman's office late in January.

Because these are unusual microscopes, it is believed that anyone to whom they may be

offered will be suspicious and it is hoped that such persons will report to Dr. Weinman.

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Kansas City Association.—Dr. C. K. Whitehair, Oklahoma A. & M. College, Stillwater, spoke at the March 20 meeting of the Kansas City Veterinary Medical Association. The motion picture "A Trip Through a Pig Factory" was shown, and **Dr. A. H. Quin** was moderator of a discussion on practice problems.

s/K. M. CURTS, *Secretary.*

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Kansas City Small Animal Hospital Association.—At the February 5 meeting of the Kansas City Small Animal Hospital Association, **Dr. G. H. Murphy** (M.D.), Kansas City, discussed "Possible Relationship of Canine Eczema and Skin Diseases of Man." At the March 5 meeting, **Dr. S. W. Haigler,** St. Louis, chairman of the AVMA Committee on Ethics, discussed ethics and showed the AVMA strip film "The Golden Rule for Veterinarians." A general discussion on distemper immunization theories followed.

Association officers are Drs. J. A. Farney, president; R. O. Zimdahl, vice-president; and T. M. Eagle, secretary-treasurer.

s/T. M. EAGLE, *Secretary.*

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Mules Feel the "Draft" Too.—According to the Kansas City Times of Feb. 19, 1951, infantry commanders in Korea are pleading for pack mules. Why? Korea's mountains are steep and craggy, and mules are needed to pack food and water to isolated doughboys. The airdrop may be dramatic but too large a percentage of the material dropped floats into enemy territory. The infantry says it adds up to: "Where are the mules?"

s/A. H. QUIN.

Nevada

Personal.—Dr. Jack R. Pitcher, Carson City, spoke at the ninth annual meeting of the Dairymen's Association held in the Pyrenees Hotel, Gardnerville, Feb. 27, 1951.

New Jersey

Dr. Richard Shope Honored by Utrecht University.—Dr. Richard E. Shope, M.D., associate director of the Merck Institute for Therapeutic Research, Rahway, received an honorary doctorate in veterinary science from the University of Utrecht, Netherlands, on March 16, 1951. He was the only American among several Europeans to receive honorary degrees at the University. While in Europe, he also was inducted formally into the Royal Society of Medicine in London. He has been a member of the Society since 1944.

On this side of the Atlantic, and among veterinarians in particular, Dr. Shope is best known for his work on virus diseases and his demonstration that swine influenza is caused by the combined action of a virus and a bacterium; also that the disease is transmitted through an intermediate nematode parasite. He was also director of the wartime Grosse Isle, Quebec, project to develop a mass-production method for rinderpest in cattle.

Dr. Shope was formerly on the staff of the Rockefeller Institute for Medical Research, Princeton, saw active duty with the Navy in the Pacific, and is currently a consultant with the Research and Development Board of the USDA. At the Merck Institute, Dr. Shope is conducting research in animal diseases including hog cholera and swine influenza.

s/J. R. PORTEUS, *Resident Secretary.*

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State Association Officers.—New officers of the Veterinary Medical Association of New Jersey are Drs. Elwood G. Fooder, Haddonfield, president; Amos W. Stults, Hopewell, first vice-president; John M. McCarthy, West Englewood, second vice-president; Arthur F. North, Somerville, treasurer; and J. R. Porteus, Trenton, secretary.

s/J. R. PORTEUS, *Secretary.*

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the Hotel Statler, March 7. Guest speaker was **Dr. Aage Thordel-Christensen,** resident in pathology at the Angell Memorial Animal Hospital. Dr. Christensen is on leave from the Royal Veterinary and Agricultural College, Copenhagen, Denmark, where he is assistant professor of special pathology.

The motion picture, "Striking Back Against Rabies," was shown through the courtesy of the U.S. Public Health Service.

s/C. R. SCHROEDER, *Secretary.*

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Personal.—The Reverend William G. Love (V.M.D., UP '33), formerly of St. Mary's Church, Siquirres, Costa Rica, is now priest in charge of St. Thomas' Church, Tupper Lake, N. Y., and chaplain at Sunmount Veterans' Hospital, Tupper Lake, and at Trudeau Sanatorium, Saranac Lake.

North Dakota

Regional Defense Meeting—Representatives of state officials from North Dakota, Minnesota, South Dakota, Montana, and from Washington, D.C., and Canada attended a regional civil defense meeting in Bismarck, N. Dak., March 16, 1951, to plan federal and state veterinary service to combat animal diseases that might occur by planned enemy action or other causes. This was one of the ten regional defense meetings referred to in the April JOURNAL (p. 277).

s/FREDERIK LOW, *Resident Secretary.*

Dr. Brandenburg Honored.—On Feb. 2, 1951, Dr. T. O. Brandenburg, executive officer and state veterinarian for North Dakota was honored for his many contributions to the livestock industry of North Dakota by having his picture hung in the "Hall of Fame" of the Saddle and Sirloin Club of the North Dakota Agricultural College, Fargo. This is an annual event, and two years

Dr. T. O. Brandenburg

ago another veterinarian, Dr. Carl Hofstrand of Leeds, was so honored because of his activities as a purebred cattle breeder. Dr. Brandenburg, however, is the first veterinarian honored as such. In his acceptance speech at the banquet, he stated that he did not consider this a single honor to himself but as an honor bestowed upon the veterinary profession.

Also appearing on the program was Dr. D. F. Eveleth, head, Department of Veterinary Science, North Dakota Agricultural College, who unveiled the portrait, and Dr. Glenn C. Holm, Department of Bacteriology and Veterinary Science, who delivered the main address. Mr. Raymond C. Stack, Minot, a pre-veterinary student, told of Dr. Brandenburg's accomplishments as a fearless leader and his strict enforcements of laws and regulations for protecting the livestock industry.

s/*North Dakota V.M.A. Committee on Public Relations.*

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New State Meat Inspection Law.—An act relating to the minimum standards for the inspection, sanitation, and distribution of meat and meat products within the State of North Dakota; providing for the inspection of establishments engaged in the production of meat and meat products for human consumption by the State Livestock Sanitary Board; providing for the free course of trade between the various municipalities within the state of the products governed by this regulation; and declaring an emergency, was made law in North Dakota Legislative Session ending March 3, 1951.

s/FREDERIK LOW, *Resident Secretary.*

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Dr. Shigley Returns from South America.—Dr. Fred M. Shigley (MSC '23), veterinarian in charge, Bureau of Animal Industry, returned to his station on March 16, 1951, after a six-month sojourn in Colombia, South America, in the capacity of technical adviser to the Colombian government on foot-and-mouth disease control. Present plans for construction of a diagnostic laboratory to produce sufficient vaccine for a long-range program against the disease are being carried out by the United Nations Food and Agriculture Organization.

s/FREDERIK LOW, *Resident Secretary.*

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Personals.—Dr. George J. Worner, for more than thirty years an employee of the BAI in Bismarck, has retired to accepted the position of meat inspector at Minot.

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Drs. C. H. Hofstrand, Leeds, and W. Fleenor, Wahpeton, were representatives from their respective districts in the session of the North Dakota legislature which closed March 3.

s/ FREDERIK LOW, *Resident Secretary.*

Ohio

Canine Nutrition Conference.—On Feb. 7, 1951, approximately 50 veterinarians were guests of the Yankee Frozen Foods Distributing Company, Cleveland, at a conference on prescription diet and canine nutrition. **Dr. Mark L. Morris,** New Brunswick, N.J., was the conference speaker. The attendance, in spite of icy roads and bad weather, was a good indication of the interest of the veterinarians in this conference.

Oklahoma

Tulsa Association.—On Jan. 18, 1951, the following officers were elected to serve the Tulsa Veterinary Medical Association for the ensuing year: Drs. Wm. Carnes, Muskogee, president; T. B. Ratliff, Tulsa, vice-president; and John Carnes, Muskogee, secretary-treasurer.

s/JOHN CARNES, *Secretary.*

Pennsylvania

Keystone Association.—At the February meeting of the Keystone Veterinary Medical Association, **Dr. Alfred Kissileff,** Flourtown, discussed "How a New Development in Artificial Insemination will Affect the Veterinarian." The meeting was held in the University Room of the Penn Sheraton Hotel, Philadelphia.

s/RAYMOND C. SNYDER, *Secretary.*

At the March 28 meeting, **Dr. Roy D. Hoffman,** president of the Pennsylvania State Veterinary Medical Association, showed motion pictures of teat surgery and bleeding of poultry, and discussed activities of the state organization.

s/RAYMOND C. SNYDER, *Secretary.*

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Bucks-Montgomery Association.—The Bucks-Montgomery Veterinary Medical Association met on Feb. 8, 1951, at the Doylestown Moose Hall to hear Dr. Roy D. Hoffman, Bedford, president of the Pennsylvania Veterinary Medical Association, discuss and show motion pictures of the various phases of general practice.

s/V. W. PUTH, *Secretary.*

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Dr. Bishop Retires.—Dr. Charles P. Bishop (UP '14), for eleven years director of the BAI, State Department of Agriculture, retired in March after serving the Department for more than twenty-eight years. Dr. Bishop will long be remembered for his work in evolving an effective brucellosis-testing program as well as his work in tuberculosis eradication and control of poultry diseases. Dr. Bishop, who was awarded a gold medallion for his services as president of the U. S. 'Livestock Sanitary Association during 1950, is the first active president of this association to be so honored. He was also president, in 1942 and 1943, of the Pennsylvania State Veterinary Medical Association and served overseas in the Veterinary Corps during World War I.

Dr. Howard A. Milo (UP '16), who has been on the BAI staff for twenty-five years, will temporarily fill the post vacated by Dr. Bishop.

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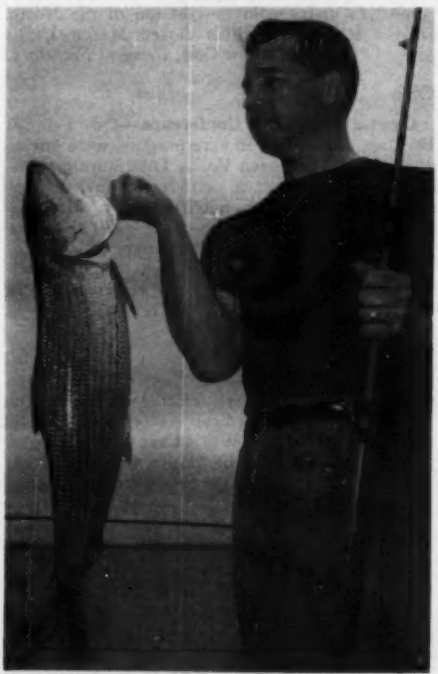

Dr. H. Robert Becker, York, Pa., and the 14-lb. bonefish he caught while fishing off Bermuda on Dec. 29, 1950. The fish exceeds by ¼ lb. the Atlantic record established thirty-one years ago.

FOREIGN NEWS

Colombia

Foot-and-Mouth Disease Outbreak.—Foot-and-mouth disease has spread to Colombia from Venezuela, and thousands of cattle have become infected in a short time. Colombia is one of the most important cattle-producing countries in South America. A limited vaccination program is in operation. The vaccine is being imported from Europe.

France

Office International des Epizoöties.—The OIE, founded about thirty years ago by Professor Leclainche for the purpose of evolving an officially instituted system of animal disease control throughout the world, now has a roster of 52 countries. Permanent offices are maintained in Paris. The present director is Prof. G. Ramon, formerly head of the Pasteur Institute of Paris. The membership comprises all the principal nations of the Eastern Hemisphere on both sides of the Equator. The Western Hemisphere is represented by Argentina, Uruguay, Peru, Mexico, and the colonies of the European empires. The United States thus far has participated in the role of guest, only.

The organization publishes a comprehensive journal by international arrangement. The address is Bulletin, Office International des Epizoöties, 12 Rue de Prony, Paris 17, France.

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Epidemic of Tularemia.—Many sick and dead rabbits were observed in the eastern part of France simultaneously with an epidemic of tularemia in the same region. Eighty human cases occurring during last summer seemingly indicate that *Pasteurella tularense* infection is not as rare as once supposed in this country.

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Emile Nicolas (1874-1950).—The demise on Aug. 3, 1950, of Professor Emile Nicolas (*Rec. de Méd. Vét.,* Dec., 1950), former director of his alma mater and of the veterinary schools of France, removed a sturdy master of the modern veterinary educational system. Although he entered Alfort with a finished education in the arts and sciences

in 1893, a tour of military service delayed his graduation until 1898. During his professional scholarship, he was closely attached to the famous laboratory of Professor Nocard whose ways and spirit he embraced and developed through nearly a half century of labor in the fields of research, teaching, and administration. Specializing in physics, chemistry, and pharmacology, he was credited with using the profundity of these branches to securely blend scientific methods with the practice of contemporary veterinary medicine—an onus too generally unnoticed and unsung in increasing the stature of our branch of applied science.

Dr. Nicolas will be remembered for dovetailing science securely into the veterinary structure. Factually, through him, the veterinary profession was capably represented in the highest scientific circles (physics, chemistry, pathology, serology).

French Morocco

Rabbits Reservoirs of Carré's Virus.—The fact that nonsusceptible species, in the role of reservoirs, are capable of spreading viral diseases was further confirmed by the local Pasteur Institute. Though inoculations of Carré's virus were clinically inapparent in rabbits after three to five passages, the virus in their blood remained virulent for nonimmune dogs. The research is comparable to others of the same genre: hog cholera virus in cattle and sheep, human influenza in swine, Carré's virus in man, *et al.*—[*Martin, L.-A.: Maladie de Carré a forme nerveuse. Transmission du virus au Lapin. Bull. Acad. vét. (June, 1950) : 291-294.*]

Italy

Q Fever from Sheep.—Prof. T. Rosati, director of Institut Zoöprofilattico Sperimentale in Perugia, reporting (*Profilassi*, Aug., 1950) on one of the most serious epidemics of Q fever that ever occurred in Italy, disclosed that sheep were mostly responsible for the outbreaks. Underlined is the observation that the stricken inhabitants were daily exposed to the infected flocks. Cattle were negligible factors.

Japan

Dr. Kobayashi Extends Thanks.—Dr. M. Kobayashi, chief of the Japanese Government Animal Hygiene Experiment Station at Tokyo, recently spent several weeks touring the United States and contacting veterinarians at colleges and laboratories. When leaving for his native country, he requested that his thanks be extended to all who helped to make his stay pleasant in this country.

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United States Government Fellowships.—Of 7,000 candidates taking a qualifying examination for U. S. government fellowships, about 500, 80 of whom were women, were successful. Dr. Sadamoto Sakasegawa, editor-in-chief of the Japan Veterinary Medical Association, was the only veterinarian to pass the examinations.

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Correction.—On page 502 of the December JOURNAL, Dr. Kogi Saito is identified as president of the Japan Veterinary Medical Association. Dr. Saito is chief of the Animal Hygiene Section, Bureau of Animal Industry, Ministry of Agriculture and Forestry. Dr. Torai Shimamura is president of the national association.

S/SADAMOTO SAKASEGAWA.

EMERGENCY PLANNING

CIVIL DEFENSE

Dr. Clarkson Named Special Assistant for Defense in USDA

Dr. M. R. Clarkson, of the U. S. Department of Agriculture's Bureau of Animal Industry, has been named special assistant for defense in the Agricultural Research Administration. He will represent the administrator in dealings with the defense agencies within the department, those elsewhere in the federal government, and with industry.

As chief of the Division of Inspection and Quarantine in the BAI, Dr. Clarkson has served as a member of the Joint Commission for Eradication of Foot-and-Mouth Disease, set up by the governments of the United States and Mexico, since September, 1949. Previously, Dr. Clarkson spent seventeen years in the Meat Inspection Service of the Department. In 1942, he was promoted to assistant chief of the Service.

Dr. Clarkson has been extremely active in civil defense planning for the BAI, particularly against biologic warfare attacks against animals. He was serving as a veterinary consultant to the Health Resources Board at the time of this appointment. In his new position, he will be in charge of defense against biologic attacks against animals and plants. As reported in the April, 1951, JOURNAL (p. 275), Dr. Clarkson recently represented the BAI at a series of regional civil defense meetings.

A native of Ferndale, Wash., he is a graduate of Washington State College, where he received his B.S. and D.V.M. degrees in 1930. Awarded an LL.B. in 1942 by Georgetown University, he was admitted to the bar in the District of Columbia. He is 42 years old.

Dr. Clarkson is a member of the American Veterinary Medical Association, the U. S. Livestock Sanitary Association, and other scientific societies.

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BIOLOGICAL WARFARE.—"It could hit your farm tonight" is the title of an article in "Farm Journal" (April, 1951:31) on biologic warfare that should be read by every veterinarian in the country. Colonel Frank A. Todd, V.C., of the U.S. Committee on Biological Warfare, Research and Development Board, is of the opinion that it is the best article on this subject that he has read in popular magazines.

PERSONNEL

New Policy Regarding Qualifying Experience for Commissions

The Department of Defense has announced a change in regulations to eliminate inequities in the commission of medical, dental, and veterinary officers in the Armed Services under the terms of Public Law 779, 81st Congress.

By changing the method of determining the number of years of qualifying experience, the directive seeks to prevent a physician, dentist, or veterinarian who has once declined a commission from later entering the service at a higher rank than one who accepts an initial offer.

Until now, this has been possible for those classified in Priority I. Under the new policy, no qualifying experience can be obtained after the initial date on which preinduction physical examinations are begun for registrants who are in the same priority classification. This, in effect, freezes qualifying experience as of the time of preinduction physicals for the registrant's particular category.

Effective March 1, 1951, in so far as it affects registrants in Priority I, the new policy will be retroactive to the extent that any physician, dentist, or veterinarian, who has been tendered a commission and declined to accept it before that date, can count toward his rank only the experience acquired prior to Dec. 6, 1950 (the date of preinduction physical examinations).

Commissions for Special Registrants in Priorities 1 and 2

The following information was received recently from the National Advisory Committee to Selective Service.

1) A copy of a telegram from National Headquarters Selective Service System to all state directors of Selective Service reads as follows:

Instructions are being issued by the Army that special registrants of priorities 1 and 2 who are being processed by the Army will not be offered commissions until acceptability is determined and until Army has resubmitted names to state director and has received from him confirmation of present classification. Nothing shall preclude registrants from volunteering for and being offered a commission in the service of their choice within the percentage distribution laid down in Personnel Policy Board M 30-50. Cases on Selective Service appeal will not be considered as available for military service until all appeal procedures have been completed. The state director will ascertain as soon as possible in each case the present classification of availability for military service or classification in a deferred class. The state director will satisfy himself that the local board has received advice from the local advisory committee concerned. Confirmation of classification to the Army will be expedited. Those not considered available for military service at this time, and who have answered item 30 on DD form 390 in the affirmative, will not be offered commissions unless they reaffirm a positive desire for commission and volunteer for immediate active duty, or until a redetermination of their availability is made. In these cases, all papers with certificate of acceptability will be returned to the state director by the Army to be held in the local boards until such time as the registrant's classification is changed to 1-A, or 1-A-O.—Hershey.

Procedure for Processing Registrants Under Public Law 779

2) A copy of a letter from the Department of the Army to the commanding generals of Army areas reads in part as follows:

1) The following instructions deal with a new procedure of processing registrants under Public Law 779, 81st Congress, at your headquarters.

2) Commanding generals will institute following procedures without delay following receipt of this letter.

a) Subsequent to determination of professional and physical qualifications for commission of all physician, dentist, and veterinarian registrants who indicated an affirmative answer on Item 30 on DD Form 390, and prior to tender of commission to the qualified registrant, transmit by most expeditious method the name and selective service number of each such registrant to the appropriate state Selective Service director, with a request for final determination that each registrant remains in a class available for military service, i.e., classification 1-A or 1-A-O.

b) The action directed in the preceding subparagraph will be taken immediately in the case of all physician and dentist registrants upon whom allocation instructions have not been received, and in the case of veterinarians which have not been allocated to the Department of Air Force or appointed in the Department of the Army in accordance with WCL 27131.

c) When these registrants are reported back from the state Selective Service director as still remaining in classification 1-A, or 1-A-O, commanders cited above will notify the adjutant general, showing numbers of physicians, dentists, and veterinarians separately by priorities I, II, III, or IV, of Public Law 779, 81st Congress, who are professionally and physically qualified, desiring a commission, and who are either 1-A, or 1-A-O. The Department of the Army will then notify commanders of allocation to be made to each department.

d) When allocation instructions are received, Army commanders will forward all pertinent papers to the respective departmental surgeon general for necessary action. When such registrant's papers are returned without commissioning action, Army commanders will tender such registrants an Army commission.

e) When a state Selective Service director indicates that a registrant who has been reported for final determination of availability per paragraph 2 a, above is other than 1-A or 1-A-O, Army commanders will return all papers to State Selective service director, including DD Form 62, indicating acceptability for military service. Such a registrant will be considered as a case which has never been received for record purposes. Such registrants as are later determined to be in classification 1-A, or 1-A-O, by Selective Service, will be reordered for preinduction physical examination by Selective Service in accordance with current policy.

3) The procedures outlined in paragraph 2, above, will not apply to those registrants who have indicated "do not" on Item 30, DD Form 390, or to those registrants indicating "do" on Item 30, DD Form 390, who are determined to be professionally or physically disqualified for a commission. Registrants who change an original "do not" to "do" if qualified for a commission will be processed as outlined in paragraph 2 above. No other changes will be made in present methods of processing registrants who fall under groups indicated in this paragraph.

4) Any special registrant previously classified in 1-A, or 1-A-O, whose classification is changed by Selective Service from 1-A, or 1-A-O, after referral in accordance with paragraph 2 a above may, notwithstanding such change of classification, volunteer for and be offered a commission in the service of his choice within numbers to be authorized by the Department of the Army. Such registrants will be required to reaffirm their desire for commission and volunteer for immediate active duty.

Information Bulletin Vol. 1 No. 7 from the National Committee indicates that an analysis of the significance of these messages will be forthcoming; they had not been received at time of going to press. However, a recent letter from Brig. Gen. J. A. McCallam, chief, Veterinary Division, Office of the Surgeon General, Department of the Army, includes the following comments.

"The Department of the Army letter to Commanding Generals dated 10 March 1951 does change the method of processing special registrants who answered, "Yes" on item 30 DD Form 390. Substantially the letter provides that the special registrants who applied for commissions but not yet processed will not be offered an appointment in the Reserve until the state director of Selective Service has confirmed the classification of the individual as 1-A or 1-A-O. We believe the method now prescribed will have little effect, particularly as it relates to veterinarians, because approximately 90 per cent of those in priority I have been processed."

STATE BOARD EXAMINATIONS

Florida—The Florida Board of Veterinary Examiners will conduct examinations on June 25-27, 1951, at the Everglades Hotel, Miami, Fla. No applications will be accepted after June 10, 1951. C. Paul Vickers, P.O. Box 1207, Tallahassee, Fla., secretary.

Iowa—The Iowa Veterinary Medical Examining Board will hold examinations for the licensing of veterinarians on Monday and Tuesday, June 18 and 19, 1951. Applicants are asked to be in the office of the Division of Animal Industry, State House, Des Moines, Iowa, not later than 8:00 a.m. on June 18. Anyone wishing to obtain further information should communicate with Dr. H. U. Garrett, chief, Division of Animal Industry, State House, Des Moines 19, Iowa.

Massachusetts—The Massachusetts Board of Registration in Veterinary Medicine will hold examinations for registration on June 26-28, 1951, at Amherst, Mass. The latest date for filing applications is June 12. Address inquiries to Dr. Gerry B. Schnelle, secretary, Board of Registration in Veterinary Medicine, Room 33, State House, Boston 33, Mass.

Oklahoma—The Oklahoma Board of Veterinary Medical Examiners will hold examinations at Stillwater, Okla., on May 24 and 25, 1951. Application should be made to Dr. J. B. Corcoran, 127 N.W. 23, Oklahoma City, Okla., before May 24.

Utah—The Utah Veterinary Medical Examining Board will conduct examinations for license to practice veterinary medicine in Utah on June 25-26, 1951, at the State Capitol Building, Salt Lake City, Utah. Application blanks may be obtained from Frank Lees, Department of Registration, State Capitol Building, Salt Lake City, Utah.

West Virginia—The West Virginia Veterinary Board will convene at the Hotel Stonewall Jackson, Clarksburg, W. Va., on Monday July 23, 1951, at 9 a.m., for the purpose of giving examinations to those desiring to register to practice veterinary medicine in the state of West Virginia. Applications must be in the hands of the secretary at least ten days before the date set for examinations. For further particulars write to Dr. William E. Trussell, secretary, West Virginia Veterinary Board, Charles Town, W. Va.

BIRTHS

Dr. (UP '39) and Mrs. Howard Sackett, Roanoke, Va., announce the birth of a son, Richard Marcy, on Nov. 17, 1950.

Dr. (UP '48) and Mrs. Fred G. Ruder, Jr., Amherst, Mass., announce the birth of twin daughters, Janice Gibbs and Anne Stearns, on Dec. 4, 1950.

Dr. (OSU '50) and Mrs. Thomas J. Quinlan, Artesia, N. M., announce the birth of their third son, Daniel Robert, on Dec. 5, 1950.

Dr. (UP '49) and Mrs. Clifford Wright, Jr., Butztown, Pa., announce the birth of a son, Geoffrey Harrison, on Jan. 16, 1951.

Dr. (WSC '44) and Mrs. Richard S. Dubigk, Port Angeles, Wash., announce the birth of their fourth child, first son, Richard Edward, on Feb. 6, 1951.

Dr. (API '43) and Mrs. Charles Prothro Hill, Newman, Ga., announce the birth of their second child, a son, Charles Latham, Feb. 20, 1951.

Dr. (TEX '49) and Mrs. Troy C. White, Breezy Point, Athens, Texas, announce the birth of Suzanne on March 2, 1951.

Captain (WSC '44) and Mrs. U. S. G. Kuhn, III, Oakland, Calif., announce the birth of their third child, second son, on March 4, 1951.

Dr. (UP '45) and Mrs. George Gibson Meredith, Kingsville, Md., announce the birth of a son, George Gibson, Jr., on March 5, 1951.

Major (API '43) and Mrs. William D. Nettles, USAF (V.C.), announce the birth of a son, James William, at Station Hospital, Brookley AFB, Ala., on March 9, 1951.

DEATHS

★**C. E. Bassler** (KSC '07), 66, Ainsworth, Iowa, died suddenly on Jan. 9, 1951. Dr. Bassler was a general practitioner. He was a member of the Iowa Veterinary Medical Association and of the AVMA.

C. E. Baxter (CVC '93), 78, Oakland, Iowa, died Oct. 17, 1950. Dr. Baxter had retired from active practice some time ago.

Frederick C. Bornschein (OVC '13), 64, Moville, Iowa, died Jan. 28, 1951, after a long illness. Dr. Bornschein was a general practitioner.

★**A. M. Bradley** (IND '21), 58, Alvord, Iowa, died Jan. 1, 1951. Dr. Bradley was a member of the Iowa Veterinary Medical Association and of the AVMA.

Archibald E. Brannock (KCVC '16), 72 Lexington, N. Car., died Jan. 10, 1951, of a heart attack. Dr. Brannock, who had practiced in Lexington for thirty-four years, had also served the city as meat and milk inspector and chief of the fire department. He was a member of the North Carolina State Veterinary Medical Association. His widow, Myrtle Garvin Brannock, two sons, and one daughter survive him.

★Indicates members of the AVMA.

John L. Burgett (KCVC '01), Independence, Mo., died July 23, 1950.

O. G. Davidson (ONT '07), 64, Oshtemo, Mich., died Oct. 18, 1950, after an illness of two years. Dr. Davidson had practiced in Kalamazoo for forty years. He was a pioneer small animal practitioner, having had a hospital since 1922.

★**Wilton E. Dingus** (CVC '18), 58, Hite, Ky., died late in 1950. Dr. Dingus was a member of the AVMA.

Roy W. Fuller (KCV '15), 61, Murray, Iowa, died Dec. 31, 1950. Dr. Fuller had practiced in Murray since 1916. Since 1921, when he was injured, he carried on his practice from a wheel chair.

H. E. Henderson (KCV '17), Wilton Junction, Iowa, was killed March 2, 1951, in an automobile and train crash. With the exception of Army service during World War I, and subsequent service with the BAI in Maryland, Dr. Henderson had practiced in Wilton Junction since 1916. He is survived by his widow and daughter.

James N. Jerome (STJ '15), Wilson, Ark., died Dec. 26, 1950.

Harry S. Johnson (KCVC '14), 63, Central City, Neb., died Jan. 29, 1951, after an extended illness. Dr. Johnson was in general practice in Central City from the time he received his D.V.M. degree until 1943 when he entered the poultry inspection service of the Production and Marketing Administration, U.S. Department of Agriculture. He is survived by his widow, two sons, and two daughters.

★**Norman Ketover** (ALF '49), 31, Thompsonville, Conn., died early in 1951. Dr. Ketover was a member of the AVMA.

Maurice H. Knox (ONT '43), 36, Beebeetown, Ohio, died Oct. 25, 1950, of injuries received in an automobile accident. Dr. Knox was in the employ of the Cleveland Health Department.

★**Ralph Kolo** (CVC '18), 59, Evergreen Park, Ill., died March 15, 1951. Dr. Kolo was a member of the National Association of Federal Veterinarians and of the AVMA.

Andrew J. Kyle (ONT '01), 85, Sioux City, Iowa, died Jan. 21, 1951.

Will E. McClure (KCV '05), 71, Hutchinson, Kan., died Oct. 14, 1950. Dr. McClure was a member of the Kansas Veterinary Medical Association and of the Kansas Livestock Association.

Patrick H. Mullowney (HAR '91), Roslindale, Mass., died in October, 1950.

Francis T. O'Brien (CVC '11), Harvard, Neb., died Jan. 6, 1951. Dr. O'Brien was a general practitioner.

Fred A. Reynolds (CVC '20), Powers Lake, Wis., died Oct. 17, 1950.

★**W. C. Ring** (UP '11), Auckland, N. Z., died Aug. 10, 1950. Dr. Ring was a member of the New Zealand Veterinary Association and of the AVMA.

James D. Rinker (KCV '05), Galveston, Texas, died late in 1950. Dr. Rinker had retired from active practice.

Harry B. Shugar (AMER '97), 78, Lebanon, Pa., died Sept. 26, 1950.

Clifford C. Shuler (IND '12), Eaton, Ind., died Jan. 9, 1951.

J. B. Snyder (McK '11), 66, Kansas City, Mo., died Jan. 4, 1951. Dr. Snyder had been a meat inspector for Kansas City for nineteen years. He was a Member of the National Association of Federal Veterinarians.

Nathan I. Stringer (CVC '90), 89, Wenona, Ill., died in February, 1951. Dr. Stringer had retired from active practice about ten years ago.

William Thomson (ONT '08), 77, Vancouver, B.C., died on Nov. 12, 1950, of a heart attack. Born in Dalkeith, Scotland, he enlisted as a young man in the Gordon Highlanders and saw service in the Northwest Frontier Rebellion of 1897-1898 in India, and subsequently in the South African War. He migrated to Canada in 1903 and homesteaded in the Olds District in Alberta. Upon receiving his D.V.M. degree, he practiced for two years in Camrose, Alta., and then was employed in the Health of Animals Branch until his retirement in 1929. He was, until 1929, a member of the British Columbia Veterinary Association and of the AVMA.

Carl Viers (STJ '14), 64, Vermillion, S. Dak., died Sept. 29, 1950. Dr. Viers was a veteran of World War I and had served as mayor of Vermillion for nine years.

• • •

Deaths Not Previously Reported

The following is a list of veterinarians reported to the AVMA central office as deceased, by federal veterinarians in charge in the respective states, in the process of checking listings for the directory department*. These deaths have not been reported previously in the JOURNAL.

N. M. Belt, Penn Yan, N. Y.
Charles E. Caufield, New York, N.Y.
Ira D. Dennis, Hornell, N.Y.
LaVerne Dunham, Geneseo, N.Y.
E. G. Dunn, Mason City, Iowa
Andrew Y. Earl, Palmyra, N.Y.
N. A. Evans, Ogdensburg, N.Y.
John A. James, Lebanon, Pa.
James F. Lynett, Scranton, Pa.
Alexander McConnell, Brockport, N.Y.
James G. Miller, Ithaca, N.Y.
Ralph D. West, Franklin, N. Car.
R. F. Wolfe, Guthrie Center, Iowa

*In the process of checking the roster of veterinarians in each state through federal veterinarians in charge, the death of Dr. Lewis C. Weeks of Falmouth, Mass., was erroneously reported to us and appeared in the obituary list on page 212 of the March JOURNAL.

PENICILLIN S-R

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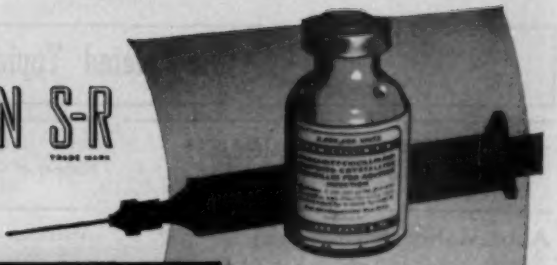

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- More penicillin per cc.
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- No added suspending agent.
- No added dispersing agent.
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- No refrigeration necessary until addition of aqueous diluent.
- No loss of potency up to one week under refrigeration after addition of aqueous diluent.
- Special injection technics not required.
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- Special type syringe not required.
- Syringe need not be dry.
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An'Related Topics

WATCH YOUR ENGLISH AND OURS

Abbreviations (*Continued*)

3) *Periodicals.*—The AVMA does not abbreviate geographic names in the titles of periodicals, unless the name of the country is used as an adjective: e.g., America, Canada, and Australia are spelled out, but American is abbreviated Am.; Canadian, Canad.; and Australian, Austral. The following list is a key to abbreviations the AVMA publications use for periodicals.

A.—Association
Abstr.—Abstract
Acad.—Academy
Académie(Fr.)
Agric.—Agricultural
Am.—American
An.—Anales(Sp.)
Anat.—Anatomy
Anatomía(Sp.)
Anatomie(Fr.)
Ann.—Annual
Annals
Annales(Fr.)
Annali(It.)
Annalen(Ger.)
Arb.—Arbeiten(Ger.)
Arch.—Archive(s)
Archiv(Ger.)
Archivio(It.)
Archivos(Sp.)
Arzt.—Arztliche(Ger.)
Bact.—Bacteriology
Bacteriologic
Bakt.—Bakteriologie (Ger).
Bakteriologiska (Scand.)
Ber.—Beriche(Ger.)
Berl.—Berliner(Ger.)
Biochem.—Biochemical
Biol.—Biology
Biological
Biologie(Fr.,Ger.,It.)
Bl.—Blatter(Ger.)
Bol.—Boletin(Sp.)
Boll.—Bollettino(It.)
Brit.—British
Britannica
Bull.—Bulletin
But.—Butlleti(Sp.)
Canad.—Canadian
Centralb.—Centralblatt (Ger.)
Cent.—Central
Centrale(Fr.)
Chem.—Chemical
Chemistry
Chim.—Chimica(It.)
Chimie(Fr.)
Chir.—Chirurgia(It.)
Chirurgie(Fr.)
Chirurgical(Fr.)
Chirurgus(L.)
Cir.—Cirurgia(Sp.)
Clin.—Clinic(al)
Clinica(It.)
Clinique(Fr.)
Coll.—College
Comp.—Comparative
Compar.—Comparata (It.)
Compt. rend.—Comptes rendus(Fr.)
Cong.—Congress
Congrès(Fr.)
Crón.—Crónica(Sp.)
d.—de(Fr.)
die(Ger.)
Dent.—Dental
Dentistry
Dermat.—Dermatology
Diag.—Diagnosis
Diagnosi(It.)
Diagnose(Fr.)
Dig.—Digest
Digest.—Digestive
Dis.—Disease(s)
Educ.—Education
Epizoöt.—Epizoötic

(*Continued on p. 26*)

COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

American Animal Hospital Association. Annual meeting. Chalfonte-Haddon Hall, Atlantic City, N. J., May 2-5, 1951. Wayne Riser, 5335 Touhy Ave., Skokie, Ill., secretary.

Southern Minnesota Veterinary Medical Society. Spring meeting. Hormel cabin, Austin, Minn., May 10, 1951. George A. Young, Jr., Hormel Institute, Austin, Minn., secretary.

Communicable Disease Center. Short course in laboratory diagnosis of rabies. Virus laboratories of the Communicable Disease Center at Montgomery, Ala., May 14-18, 1951. Applications should be directed to Dr. R. F. Reider, in charge, Laboratory Training Services, CDC, Public Health Service, P.O. Box 185, Chamblee, Ga.

Kansas State College. Annual conference for veterinarians. Kansas State College School of Veterinary Medicine, Manhattan, Kan., June 1-2, 1951. E. R. Frank, chairman.

Texas Veterinary Conference. School of Veterinary Medicine, A. & M. College of Texas, College Station, Texas, June 7-8, 1951. R. D. Turk, chairman, conference committee.

Alabama Polytechnic Institute. Annual conference for veterinarians. Alabama Polytechnic Institute School of Veterinary Medicine, Auburn, Ala., June 7-9, 1951. R. S. Sugg, dean.

North Carolina State Veterinary Medical Association. Annual meeting. Hendersonville, N. Car., June 8-9, 1951. J. H. Brown, Tarboro, N. Car., secretary.

American Society for the Study of Sterility. Annual meeting. Ritz-Carlton Hotel, Atlantic City, N.J., June 8-10, 1951. Walter W. Williams, 20 Magnolia Terrace, Springfield 8, Mass., secretary.

North Dakota Veterinary Medical Association. Annual meeting. Rudolph Hotel, Valley City, N. Dak., June 10-12, 1951. T. O. Brandenburg, Capitol Building, Bismarck, N. Dak., secretary.

South Carolina Veterinary Medical Association. Annual meeting. Clemson House, Clemson,

(*Continued on p. 30*)

HERE'S THE WORLD'S LARGEST AND MOST MODERN DOG FOOD PLANT
. . . here's where Gaines is made.

Gaines uses precision equipment designed *exclusively* for the manufacture of dog food. Extensive research . . . through the use of laboratories and kennels second to none . . . also plays an important role in the development and production of Gaines. For 23 years, Gaines has devoted itself solely to the study of dog nutrition.

These resources . . . added to the skill and knowledge of Gaines' top-flight scientists, technologists and workmen . . . produce superior nourishment, uniformity and economy. This combination protects your *good* name when you recommend Gaines, America's largest-selling dog food, to your clients.

Gaines Meal for all dogs

"Nourishes Every Inch of a Dog"

A Product of General Foods

(WATCH YOUR ENGLISH — *continued from p. 24*)

Ergebn.—Ergebnisse (Ger.)
Exot.—Exotique(Fr.)
Exper.—Experiment
Exptl.—Experimental

f.—für(Ger.)
Fac.—Faculty Faculté(Fr.)
Franc.—Francaise(Fr.)

Gac.—Gaceta(Sp.)
Gastroenterol.—Gastroenterology
Gaz.—Gazette Gazeta(Sp.)
Gazz.—Gazzetta(It.)
Gen.—General
Gén.—Générale(Fr.)
Geog.—Geography Geographic
Gynec.—Gynecology

Helminthol.—Helminthology
Hered.—Heredity
Hist.—History Historie(Fr.)
Hosp.—Hospital
Husb.—Husbandry

Hyg.—Hygiene Hygiéne(Fr.)
Immunol.—Immunology
Imp.—Imperial
Indust.—Industry Industrial
Infect.—Infectious
Inst.—Institute Institut(Fr.)
Int.—Internal
Invest.—Investigation

J.—Journal
Jahrb.—Jahrbuch(Ger.)
Jap.—Japanese

Klin.—Klinische(Ger.)

Lab.—Laboratory
Laryng.—Laryngology

M.—Medical
Med.—Medicine
Méd.—Médecine(Fr.)
Mem.—Memoires
Mém.—Mémoire(Fr.)
Ment.—Mental
Metab.—Metabolism Metabolic
Mex.—Mexican

Mil.—Military Militaire(Fr.)
Min.—Ministry
Mitt.—Mitteilungen (Ger.)
Mod.—Modern
Monatschr.—Monatschrift(Ger.)

Nat.*—National
Nederl.—Nederlandisch (D.)
Nerv.—Nervous
Neurol.—Neurology
Nord.—Nordisk (Scand.)
Nutr.—Nutrition

Obst.—Obstetrics Obstetrica(Sp.)
Off.—Office
Ophth.—Ophthalmology
Organ.—Organization
Otol.—Otology

Parasitol.—Parasitology
Pat.—Patologia(It.)
Path.—Pathology Pathologie(Fr.)
Pediat.—Pediatrics
Péd.—Pédiatrie(Fr.)
Pharm.—Pharmacy Pharmaceutical
Pharmacol.—Pharmacology
Phys.—Physical
Physiol.—Physiology
Poult.—Poultry
Prac.—Practice
Prat.—Pratique(Fr.)
Proc.—Proceedings
Prod.—Product Production
Psychiat.—Psychiatric
Pub.—Public

Quart.—Quarterly

Radiog.—Radiography
Radiol.—Radiology Radiologie(Fr.)
Rap.—Rapport(Fr.)

*Do not use for *Natural* or *Nature*.

(*Continued on p. 28*)

HEPVAC!*

INFECTIOUS HEPATITIS

A single injection vaccination against a quick killer

Your clients' dog needs the protection of HEPVAC!

In the realm of canine diseases Infectious Hepatitis STANDS OUT as one of the most formidable. Almost alike in its symptoms to other diseases — yet far more fatal! Its symptoms, once observed, it is usually too late for therapeutic treatment!

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- **A killed tissue vaccine suspended in oil for slow absorption.**
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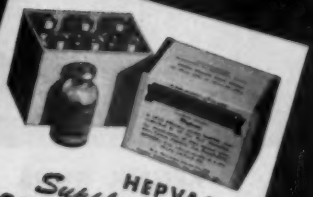

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For informative material

(WATCH YOUR ENGLISH — *continued from p. 26*)

Rec.—Record
Recueil(Fr.)
Rep.—Report
Res.—Research
Rev.—Review
Revue(Fr.)
Revista(Sp.)
Riv.—Rivista(It.)
Roent.—Roentgen
Roentgenology
Roentgenography

Scand.—Scandinavian
Schweiz.—Schweizer (Swiss)
Sci.—Science
Sect.—Section
Serol.—Serology
Serv.—Service
Soc.—Society
Société (Fr.)
Società (It.)
Sociedad (Sp.)
Stat.—Statistics
Statistical
Surg.—Surgery
Surgical

Tech.—Technology
Technique
Therap.—Therapeutics
Therapy
Therapie (Fr., Ger.)
Tijdschr.—Tijdschrift
Tierärztl.—Tierärztliche (Ger.)
Tierheilk.—Tierheilkunde (Ger.)
Trav.—Travaux (Fr.)
Travail (Fr.)
Trop.—Tropical
Tuberc.—Tuberculosis

Univ.—University
Urol.—Urology

Ven.—Venereal
Vet.**—Veterinarian
Veterinary
Vét.—Vétérinaire (Fr.)

Wchnschr.—Wochenschrift (Ger.)
Wein.—Weiner(Ger.)
Wissensch.—Wissenschaftliche(Ger.)

z.—zur(Ger.)
Zentralbl.—Zentralblatt (Ger.)
Ztg.—Zeitung (Ger.)
Ztschr.—Zeitschrift (Ger.)

**Although *V.* is used for the JOURNAL (J.A.V.M.A.), *Vet.* is preferred for general use.

Gaines Dogs Move in Style.—Eighty-five dogs of the Gaines Research Kennels of Ridgefield, Conn., were moved 900 miles to Kankakee, Ill., in February, 1951. These new kennels were constructed in Kankakee, headquarters of the Gaines Division of General Foods, because of the large Gaines dog food plant there. The dogs are used for testing Gaines dog food.

Dr. J. M. Fell, director of the Gaines kennels, accompanied the dogs on their long journey in an especially equipped Railway Express car that afforded all the comforts possible during their forty-hour jaunt.

(COMING MEETINGS — *continued from p. 24*)

S. Car., June 10-12, 1951. R. A. Mays, Columbia, S. Car., secretary.

Oklahoma conference for veterinarians. June 11-12, 1951, veterinary clinic, Oklahoma A. & M. College, Stillwater, Okla. J. W. Wolfe, Oklahoma A. & M. College, School of Veterinary Medicine, Stillwater, Okla., chairman.

Ohio State University. Annual conference for veterinarians. College of Veterinary Medicine, The Ohio State University, Columbus, June 13-15, 1951. R. E. Rebrassier, chairman.

Georgia Veterinary Medical Association. Annual meeting. Atlanta Biltmore Hotel, Atlanta, Ga., June 16-18, 1951. Chas. C. Rife, 420 Edgewood Ave., N.W., Atlanta, Ga., secretary.

Communicable Disease Center. Short course in laboratory diagnosis of rabies. School of Veterinary Medicine, University of Missouri, Columbia, Mo., June 18-22, 1951. Applications should be directed to Dr. R. F. Reider, in charge, Laboratory Training Services, CDC, Public Health Service, P. O. Box 185, Chamblee, Ga.

Vermont Veterinary Medical Association. Annual summer meeting. Basin Harbor Club, Vergennes, Vt., June 21-22, 1951. W. D. Bolton, Burlington, Vt., secretary.

Missouri Veterinary Medical Association. Annual summer meeting. Robidoux Hotel, St. Joseph, Mo., June 25-26, 1951. J. L. Wells, Box 676, Kansas City, Mo., secretary.

California State Veterinary Medical Association. Annual meeting. Mar Monte Hotel, Santa Barbara, Calif., June 25-27, 1951. Charles S. Travers, 3004 16th St., Rm. 208, San Francisco, Calif., executive secretary.

Massachusetts Institute of Technology. Spe-

(*Continued on p. 32*)

(COMING MEETINGS — *continued from p. 30*)

cial course in food technology. Massachusetts Institute of Technology, Cambridge 35, Mass., June 25 to July 13, 1951. Professor Walter H. Gale, director of the summer session.

Maritime Veterinary Associations (New Brunswick, Nova Scotia, and Prince Edward Island). Annual joint conference. Mount Allison University, Sackville, New Brunswick, June 26-28, 1951. J. F. Frank, P.O. Box 310, Sackville, New Brunswick, secretary.

Maryland State Veterinary Medical Association. Annual summer meeting. George Washington Hotel, Ocean City, Md., June 28-29, 1951. John D. Gadd, Towson 4, Md., secretary.

New York State Veterinary Medical Society. Annual meeting. Mark Twain Hotel, Elmira, N.Y., July 10-13, 1951. J. S. Halat, 1231 Gray Ave., Utica, N.Y., executive secretary.

Kentucky Veterinary Medical Association. Annual summer convention. Seelbach Hotel, Louisville, Ky., July 11-12, 1951. T. J. Stearns, Livestock Exchange Building, Room 114, Bourbon Stockyards, Louisville, Ky.

American Veterinary Medical Association. Annual meeting. Milwaukee Auditorium, Milwaukee, Wis., Aug. 20-23, 1951. J. G. Hardenbergh, American Veterinary Medical Association, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

Canadian Veterinary Medical Association. Third annual meeting. Banff Springs Hotel, Banff, Alta., Sept. 8-11, 1951. J. G. Anderson, 1016 9th Ave. W., Calgary, Alta., chairman, local committee.

Second International Gerontological Congress. Hotel Jefferson, St. Louis, Mo., Sept. 9-14, 1951. E. V. Cowdry, 660 South Kingshighway, St. Louis 10, Mo., president.

Nutritional Conference for Veterinarians. Annual conference. Iowa State College, Ames,

(*Continued on p. 34*)

Perfect Balance

is required in this life or death act.

BALAMAC

To the high trapeze artist perfect balance is an essential skill. To dog nutrition amino acid balance is equally important. BALAMAC is the principle of BALanced AMino ACids as attained in Ideal Dog Food. Every structure of the dog's (or cat's) body requires balanced amino acids, which we attain with the BALAMAC principle by which Ideal Dog Food *alone* is processed.

Vitamins, while essential and important in a balanced relationship with amino acids, cannot replace the amino acid balance attained in Ideal Dog Food by our BALAMAC Principle. Lack of this balance results in poor growth and lowered resistance to diseases.

The Famous "7-Course Meal" Feeds the dog in 7 ways

1. MEAT BY-PRODUCTS—Animal protein for muscles and growth.
2. BONE—Calcium and phosphorus for bones and teeth.
3. WHEAT AND BARLEY—Carbohydrates for energy.
4. WHEAT GERM—Thiamine, vitamin E and vegetable protein for vitality and nerves.
5. CARROTS—Minerals, carotene and roughage for clear eyes and glossy coat.
6. COD LIVER OIL—Vitamins A and D for health and healing.
7. SOY GRITS—Vegetable protein for strong sinews and tendons.

Send penny post card for booklet on Amino Acids to Wilson & Co., Ideal Dog Food Dept., U. S. Yards, Chicago, Illinois

Another WILSON Quality Product

(COMING MEETINGS — *continued from p. 32*)

Iowa, Sept. 13, 1951. C. D. Lee, Iowa State College of Agriculture, Ames, Iowa, extension veterinarian.

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. Howard F. Carroll, 2024 Lombard St., San Francisco 23, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. Thomas Eville, Route 1, Box 136H, Fresno, Calif., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. O. A. Soave, 5666 Telegraph, Oakland, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and

(*Continued on p. 36*)

(COMING MEETINGS — *continued from p. 34*)

August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis Veterinary Medical Association. Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. W. C. Schofield, Dept. of Animal Pathology, Ralston-Purina Co., St. Louis 2, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month. Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Wednesday of even-numbered months. R. A. Case, 400 S. Garden St., Peoria, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind, secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month. in Louisville or within a radius of 50 miles. F. M. Kearns, 3622 Frankfort Ave., Louisville 7, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Keystone Veterinary Medical Association, the Penn-Sheraton Hotel, 39th and Chestnut St., Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., corresponding secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month. Write R. W. Worley, secretary, 3224 L.W.W., South Bend, Ind., for location.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each

(*Continued on p. 38*)

Friskies

Authoritative information on the scientific care and feeding of dogs. Published by Albers Milling Company (a division of Carnation Company) under the supervision of Dr. E. M. Gildow, B.S., M.S., D.V.M., Director of Research.

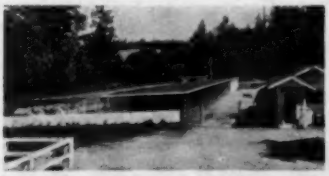
No. 11

DOG RESEARCH NEWS

Confusion in Feeding Meat to Dogs

The average man who has kept a dog for years, or the average individual or organization who has handled numerous dogs, still depends to no small extent upon beliefs and opinions. It does not take long to determine this fact when one looks into any phase of this work.

In so common a practice as feeding meat to dogs, if one inquires why meat is fed, he usually gets one of three answers. Some say because the dog is carnivorous and consequently a meat eater. Others say that the dog likes meat. A third states that when meat is fed, the dog is kept in a healthier condition.



Constant research in dog nutrition is carried on at the Friskies Research Kennels.

Then again, if one inquires whether the meat should be raw or cooked, and if cooked, to what extent, and whether it is better to feed beef, lamb, veal, pork, liver, heart or kidney, you quickly obtain a variety of replies that indicates that the whole subject of feeding meat is generally misunderstood.

Completeness of Diet is What Counts

Great progress has been made on the question of correct nutrition. And the further we go on this subject, the more we comprehend that it is not so much a question of meat and vegetables and grains that we are considering, but a question of *completeness* of diet.

We know that meat may be deficient in certain vitamins. That it makes a good deal of difference what kind of meat is fed, and how much. And somebody who has decided on feeding so many pounds of meat and so many pounds of commercial dog food cannot possibly know whether he is feeding correctly from a vitamin standpoint, without an analysis.

The Solution to the Feeding Problem

It follows that the dog owner is better off to feed a *complete* diet such as Friskies, exclusively. Feeding Friskies requires no technical knowledge of food elements, and eliminates entirely all guesswork in feeding. Friskies is one meal that is scientifically balanced to provide every single food element dogs are known to need for total nourishment.

HAVE A QUESTION about dog breeding, feeding or care? Address Friskies, Dept. Y, Los Angeles 36, Calif.

month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New York City Veterinary Medical Association. Hotel Statler, New York, N. Y., the first Wednesday of each month. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

North San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. V. E. Graff, Oakdale, Calif., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month. James R. Ketchersid, 666 East Highland Avenue, San Bernardino, Calif., secretary.

Orange County Veterinary Medical Association, bimonthly, the second Tuesday of each month. J. H. Bower, P. O. Box 355, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. E. W. Paul, Box 866, Redwood City, Calif., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month, in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. L. G. Nicholson, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. John E. Wion, 3164 Redwood Highway South, Santa Rosa, Calif.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, 7:00 p.m., in Rocky Mount. G. L. Gilchrist, Edenton, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the fourth Friday of each month. R. C. Goulding, 11511 Capitol Avenue, Sacramento, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. R. J. McFarland, 3621 Jewell St., San Diego 9, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. D. H. McDole, 8674 Melrose Ave., Los Angeles 46, secretary.

South Florida Veterinary Society, the third Tuesday of each month, 8:00 p.m., at the Peckway Skeet Club, Robert P. Knowles, 2936 N.W. 17th Ave., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

Foreign Meetings

First Pan American Veterinary Conference. Lima, Peru, Oct. 20-26, 1951. José Santivañez, dean, Veterinary College, San Marcos University, Lima, Peru.

Dr. Klussendorf to Head New Veterinary Medical Services

Commercial Solvents Corporation, through Mr. T. C. Carswell, vice-president in charge of research and development, announces the appointment of Dr. R. C. Klussendorf (CORN '31) as director of veterinary medical services. Dr. Klussendorf will have his headquarters in Terre Haute, Ind., and will work closely with the research and sales departments. He comes to this position with Commercial Solvents from the editorship of the JOURNAL of the American Veterinary Medical Association.

CONTROL SWINE ENTERITIS!

VETERINARY

SULFATHALIDINE®

phthalylsulfathiazole

Just *one dose daily* of SULFATHALIDINE® phthalylsulfathiazole is remarkably effective in curtailing losses from swine enteritis.

Given orally, SULFATHALIDINE is nontoxic, since less than 5% is absorbed and over 95% of its antibacterial action is in the intestinal tract. Thus, administration of SULFATHALIDINE results in smaller dosage, more economical treatment.

SUPPLIED:

No. 2264—4.0-Gm. (60-gr.) tablets (slotted), bottles of 100 and 500.

No. 2261—0.5-Gm. (7.7-gr.) tablets (slotted), bottles of 100 and 1,000.

No. 2267—¼-lb. and 1-lb. bottles of powder.

'BOVIMIDE'

TRIPLE SULFONAMIDE SUSPENSION WITH KAOLIN

Given orally, 'BOVIMIDE', new triple sulfonamide suspension, is equally effective in treatment of swine enteritis, or when used prophylactically where the disease is endemic. It provides the bacteriostatic action of SULFATHALIDINE, sulfamerazine and sulfamethazine, plus protective, adsorbent kaolin. **Supplied: No. 2357**—Bottles of 16 fluid-ounces.

Each 100 cc. of 'BOVIMIDE' contains:

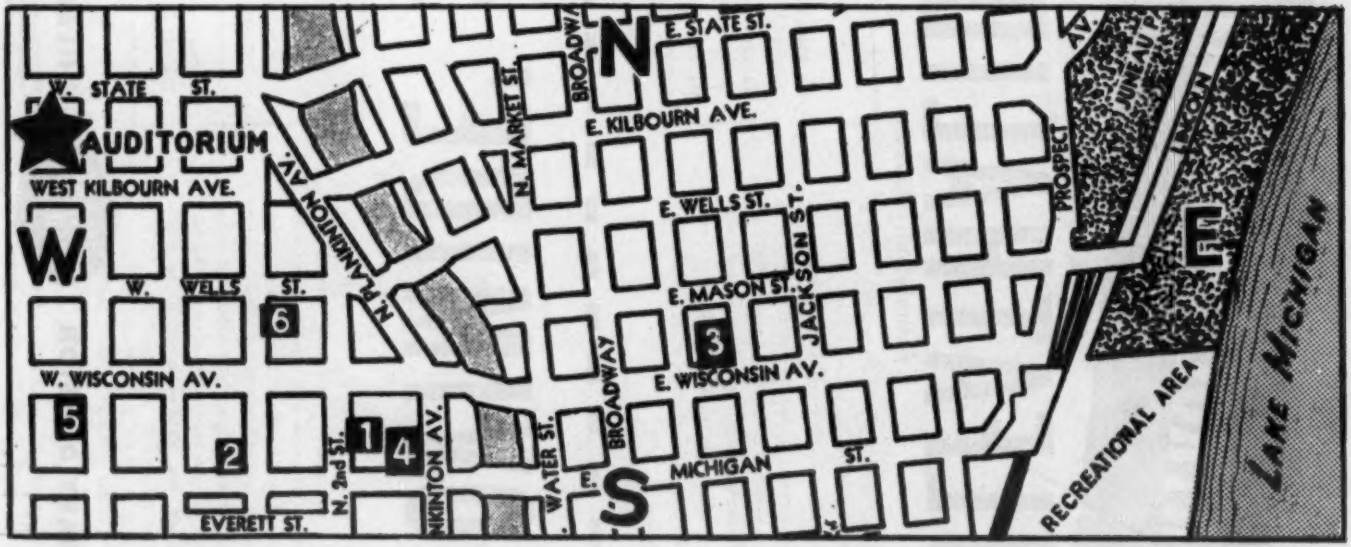
SULFATHALIDINE® phthalylsulfathiazole	6.8 Gm.
Sulfamerazine	0.6 Gm.
Sulfamethazine	0.6 Gm.
Kaolin	10.0 Gm.
Alcohol	5%

VETERINARY DIVISION SHARP & DOHME **PHILADELPHIA 1, PA.**

BRANCHES: Atlanta, Baltimore, New York, Philadelphia, Denver, Memphis, Los Angeles, Columbus, Boston, Chicago, Kansas City, San Francisco, Portland, Dallas, St. Louis, New Orleans, Minneapolis.

Street Diagram of Milwaukee, Wisconsin, Showing Hotels Selected for AVMA Meeting and Their Proximity to the Auditorium

***Note:** The section shown on this diagram lies in the southeastern part of Milwaukee and represents only a small portion of the city's total area.*



1. Antlers 2. Medford 3. Pfister 4. Plankinton House 5. Schroeder 6. Wisconsin

HOTEL RESERVATIONS — MILWAUKEE CONVENTION

Eighty-Eighth Annual Meeting, AVMA, August 20-23, 1951

Selected hotels listed below are all near the Milwaukee Auditorium, where convention activities will be centered. Fill out reservation form and mail it directly to hotel of your first choice. If that hotel is filled, it will forward your request to another hotel you have named. Confirmation will come from hotel which accepts reservation. Since this is an auditorium convention, there will be no headquarters hotel.

HOTELS AND RATES* — SEE LOCATIONS ON OPPOSITE PAGE

Hotel	Single	Double (with Double Bed)	Double (with Twin Beds)
1. Antlers	$2.25-5.00	$3.50-6.00	$6.00
2. Medford	3.00-4.00	4.25-5.25	6.00-7.00
3. Pfister	3.50-8.00	6.50-10.00	7.00-12.00
4. Plankinton House	3.50-6.00	6.00-8.00	6.50-9.00
5. Schroeder	3.75-10.00	6.50-10.00	8.00-12.00
6. Wisconsin	3.50-7.50	5.50-9.00	7.50-10.00

*Information about availability and rates of suites may be obtained on request to hotels of your choice. See reservation form below.

Cut Off Here

HOTEL RESERVATION FORM — AVMA CONVENTION

To: (Name of Hotel) ..... Date .....

Milwaukee, Wis.

Please make reservations indicated below:

(Three choices MUST be shown.)

First choice hotel .....

Second choice hotel .....

Third choice hotel .....

Accommodations and Rates Desired:

☐ Single room at $..... per day

☐ Double-bed room at $..... per day

☐ Twin-bed room at $..... per day

☐ Send me information about suites

Arriving on (date) ..... at..... a.m..... p.m.

Leaving on (date) ..... at..... a.m..... p.m.

Room will be occupied by:

Name ..... City and State .....

Name ..... City and State .....

Your Name (print or type) .....

Street Address .....

City ..... Zone ..... State .....

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

Remittance must accompany order.

Deadline for want ads 8th of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

Experienced, capable veterinarian wanted to manage small animal hospital. Must have California license. Either salary or commission. Address "Box D 1," c/o JOURNAL of the AVMA.

Capable, conscientious, young veterinarian needed for general field work, with some office duties, in Wyoming. Write, giving details of experience, to Dr. G. H. Good, State Veterinarian, Cheyenne, Wyo.

Wyoming State Veterinary Laboratory, Laramie, Wyo., desires to employ a young veterinarian for investigative work on animal diseases in the field and diagnostic and research work in the laboratory. Experience desirable but not essential.

WANTED—veterinarians to travel. High earnings, no investment. Veterinarian-owned company offers distributorships in several states for new, proved mineral feeds. Endorsed as definitely superior to bone meal and competitive feeds; underselling all. Distributors to establish dealers and be fully responsible for state or area. We provide nutritional and sales counsel. Address "Box G 9," c/o JOURNAL of the AVMA.

WANTED—assistant in large mixed practice in northern New England. Eighty per cent large animal. Well-equipped small animal hospital. Must be from AVMA-approved school. Send snapshot. Address "Box G 19," c/o JOURNAL of the AVMA.

Wanted—Positions

Veterinarian from Europe, Dr. P. Lapatinskas, 50, graduated in Kaunas (Lithuania). Twenty years' experience; speaks sufficient English, fluent Lithuanian, Russian, and German. Wishes to work as assistant in mixed practice or meat control. First citizenship papers taken out. Address Dr. P. Lapatinskas, 4716 S. Marshfield Ave., Chicago 9, Ill.

WANTED—assistantship in Florida practice, with possibility of permanent arrangement. Applicant is 30, married, draft-exempt veteran, with four and one-half years' mixed practice experience. Address "Box G 2," c/o JOURNAL of the AVMA.

Recent graduate of AVMA-approved school, with approximately four years of military service, desires

(*Continued on p. 44*)

There's LEAN, RED MEAT* in KEN-L-RATION

It Says So On The Label

INGREDIENTS: Water, HORSE MEAT, Ground Horse Bone, Soya Grits, Oatmeal, Wheat Products (Cracked Wheat, Wheat Gray Shorts, Wheat Bran), Cracked Barley, Horse Meat [illegible] 3.2%, Salt 0.5%, Primary Dried Yeast 0.18%, Irradiated 7-Dehydrocholesterol [illegible]%, Onion and Garlic Powder for flavoring, Sodium Nitrite 0.0045%, Carotene 0.003%.

MANUFACTURED BY The Quaker Oats Company CHICAGO, ILL., U.S.A.

Fortified With Vitamins and Minerals, Too!

*When you recommend KEN-L-RATION, you are sure it is a dog food that gives sound nutrition. As it says on the label, every can contains lean, red meat—choice cuts of U. S. Government Inspected horse meat. This famous food also contains all vitamins, minerals and other elements known to be essential for dogs. Extensive kennel tests and the experience of many leading veterinarians prove that dogs of all breeds thrive on KEN-L-RATION. You can recommend it with confidence to dog owners.

KEN-L-RATION

The Quaker Oats Company
Ken-L-Products Division
Chicago, Illinois

(CLASSIFIED ADS — *continued from p. 42*)

association with busy practitioner, leading to lease, partnership, or ownership. Address "Box G 4," c/o JOURNAL of the AVMA.

British graduate, London, 1948, 25, single, immigrating to America shortly, wishes to contact practitioner with view to employment. Good general experience, preference small animal. Replies forwarded to England, c/o Eugene David, Apt. 65, 238 Fort Washington Ave., New York 32, N.Y.

POSITION WANTED—veterinarian licensed in New Jersey and Pennsylvania desires position in small animal practice. Will consider offers for sale or lease of practices. Eastern states preferred. Address "Box G 7," c/o JOURNAL of the AVMA.

Veterinarian, 1941 Lithuanian university graduate, 32, married, desires position as assistant in mixed practice or as meat inspector. First citizenship papers taken out. Prefers mideastern states. Address "Box F 3," c/o JOURNAL of the AVMA.

Position wanted, by experienced graduate veterinarian, with a small animal hospital or with a general practitioner. Age 27, single, has car. Address "Box G 16," c/o JOURNAL of the AVMA.

D.P. veterinarian, graduated from Hannover Veterinary College, Germany, in 1950, desires assistantship in small animal or mixed practice. English and Russian sufficient; Lithuanian and German fluent. Address "Box G 17," c/o JOURNAL of the AVMA.

Veterinarian, with three years' experience in small animal work, desires position with a practitioner. Licensed in Pennsylvania, Connecticut, and New Jersey. Single. Address "Box G 20," c/o JOURNAL of the AVMA.

Veterinarian, with two years' laboratory experience, desires position in teaching, research, or allied fields. Good working knowledge of organic and physiologic chemistry. Address "Box G 21," c/o JOURNAL of the AVMA.

Wanted—Practices

PRACTICE WANTED—small animal or mixed. Will lease until able to purchase. Will consider assistantship with option to buy. Age 34, experienced, service exempt. Address "Box G 10," c/o JOURNAL of the AVMA.

For Sale or Lease—Practices

FOR SALE—established veterinary hospital, business section of large eastern city. $150 per month; $3,000 cash. Two-year lease. Address "Box F 12," c/o JOURNAL of the AVMA.

FOR SALE—due to the death of my husband, I am offering complete equipment including surgical, dental, obstetrical instruments, grips, drugs, and office fixtures. Ideal location for large animal practice. Very reasonably priced. Address Mrs. Guy M. Parrish, 409 Macon Ave., Louisville 7, Ky.

FOR SALE—small animal hospital in Long Island, N.Y. Modern, fully equipped, main artery, reasonable, no real estate. Army service reason for selling.

(*Continued on p. 48*)

SQUIBB *introduces*

SQUIBB

NOVOXIL UTERCAPS*

...for the treatment of retained placenta, metritis and pyometra

Description:	An elongated gelatin capsule containing approximately 0.36 grams of active colloidal silver oxide.
Indications:	For the treatment of retained placenta, metritis and pyometra in cows and mares.
Advantages:	Easy to insert. Extremely effective. Economical. Nontoxic. Stable.
Dosage:	*Retained placenta*—Insert one Utercap into each horn of the uterus. If the condition of the uterus prevents insertion into the horns, place two Utercaps into the uterine cavity or deeply into the cervical canal. If infection persists after 7 days, insert an additional Utercap. *Metritis*—Insert two Utercaps into the uterus; one into each horn if possible. If the infection persists after 7-10 days, insert an additional Utercap. *Pyometra*—Insert two Utercaps into the uterus. If the infection persists after 7 days, insert an additional Utercap.
Administration:	By hand or by use of balling gun.
How Supplied:	In boxes of 3 Utercaps that bear tear label and full instructions. Four boxes of 3 in cardboard shipper.
Expiration:	None. Should be kept in cool place, not exceeding 59 degrees F. For further information, address E. R. Squibb and Sons, Dept. AV-5, Veterinary and Animal Feeding Products Division, 745 Fifth Avenue, New York 22, New York.

* *"Utercap" is a trade-mark of E. R. Squibb & Sons*

-A NAME YOU CAN TRUST

Address "Box G 12," c/o JOURNAL of the AVMA.

FOR SALE—general practice, predominantly dairying, located in western Washington town of 6,500. No property involved, lease on office and hospital available. $2,500. Address "Box G 11," c/o JOURNAL of the AVMA.

FOR SALE—established mixed practice in western New York State, includes home and modern, well-equipped hospital. Offering for price of real estate because of poor health; requires about $10,000 cash. Address "Box G 8," c/o JOURNAL of the AVMA.

FOR SALE—large animal practice, eastern Indiana. Gross $17,000, expanding. 100 per cent tuberculosis test in county this summer. Large territory. $15,000 includes home, drugs, and equipment. Address "Box G 6," c/o JOURNAL of the AVMA.

Remittance must accompany order

FOR SALE OR LEASE—long-established large animal practice in northwest Pacific city of 100,000. Gross $12,000, price $5,000. Owner going abroad. Address "Box G 5," c/o JOURNAL of the AVMA.

FOR SALE—well-established, mostly general practice in fine dairy county of eastern Wisconsin. County seat town. No property involved. Price of $3,500 cash includes instruments, books, drugs, and office furniture. Outstanding opportunity for veterinarian with low capital desiring practice. Address "Box G 3," c/o JOURNAL of the AVMA.

FOR SALE—veterinary medical instruments of Dr. Z. C. Shum, deceased. Used in country practice. In good condition. Address Mrs. Z. C. Shum, Biggsville, Ill.

FOR SALE—located on the Boston Post Road in southern Connecticut. For a small down payment and the balance financed over a period of fifteen years, a graduate veterinarian can walk into one of the finest veterinary hospitals, with kennels, having outside runs, and which is really a showplace. One man can take care of 75 dogs without trouble. An attractive 4-room apartment is attached to the hospital. In a very wealthy community. There is a fortune here for the right man. Owner's health forces his retirement. Address "Box G 1," c/o JOURNAL of the AVMA.

FOR SALE—due to the death of my husband, I am offering an up and coming, recently established mixed practice and small animal hospital in Connecticut. Priced for quick sale. Address "Box F 9," c/o JOURNAL of the AVMA.

FOR SALE—a real buy. Small animal hospital near Los Angeles. No real estate. Grossed $20,000 last year. Forty animal capacity. Expecting recall to Army. $12,000 cash or $13,500 terms. Address "Box E 12," c/o JOURNAL of the AVMA.

Will sell mixed practice, including home and kennel building fully equipped, value of real estate. New York State, within 150 miles of New York City. Reasonably priced. Address "Box G 22," c/o JOURNAL of the AVMA.

FOR SALE—small veterinary hospital with living quarters; 30 miles southeast of Los Angeles, Calif. Address "Box G 13," c/o JOURNAL of the AVMA.

FOR SALE—well-established, growing combined practice with residence in ideal southern California residential community. $40,000 gross in 1950. Address "Box G 14," c/o JOURNAL of the AVMA.

FOR SALE—excellent mixed practice in heart of New Jersey's richest dairy area. Asking only price of instruments, drugs, and office equipment. Opportunity to obtain wonderful future for very small cash outlay. No real estate. Office and 3-bedroom house available to rent. Address "Box G 15," c/o JOURNAL of the AVMA.

FOR SALE—owner drafted. New small animal

(*Continued on p. 50*)

For more rapid absorption of subcutaneous infusions...

the new Diffusin

(Lyophilized Hyaluronidase)

- faster, safer, more effective absorption of saline, calcium gluconate, protein hydrolysates, plasma and other solutions.
- deeper, faster, more uniform local anesthesia with less anesthetic required.

Simple injection of DIFFUSIN in the subject area eliminates the search for veins in large or heavy coated animals. Here is a way to increase absorption rate while reducing possibility of infection and undesirable after-effects, even when large volumes of fluid (500 cc) are injected in one place.

Investigate DIFFUSIN. It is stable in the dry state without refrigeration. Available in boxes of 3 and 25 vials. Each vial contains 150 T.R.U.* For more information and free reference material, mail the coupon below.

**Turbidity Reducing Unit*

NEW!

Veterinary Division

ORTHO PHARMACEUTICAL CORPORATION

RARITAN, NEW JERSEY

Veterinary Division
Ortho Pharmaceutical Corporation, Dept. AV-5
Raritan, New Jersey

Please send me complete information and reference material on DIFFUSIN.

Name_____

Address_____

City_____ State_____

(CLASSIFIED ADS — *continued from p. 48*)

hospital with small house adjoining. Ideal location in San Fernando Valley. Fastest growing area of Los Angeles. Excellent opportunity. Address "Box G 18," c/o JOURNAL of the AVMA.

For Sale—Miscellaneous

FOR SALE—X-ray, Profex Mobile, head and control can be removed for portable use. Excellent condition, $300. Address Roberts, 864 Webster Ave., New Rochelle, N.Y.

Miscellaneous

WANTED—JOURNAL of the American Veterinary Medical Association, January, February, and March, 1950. Reply quoting price to Librarian, University, READING, ENGLAND.

Books and Magazines

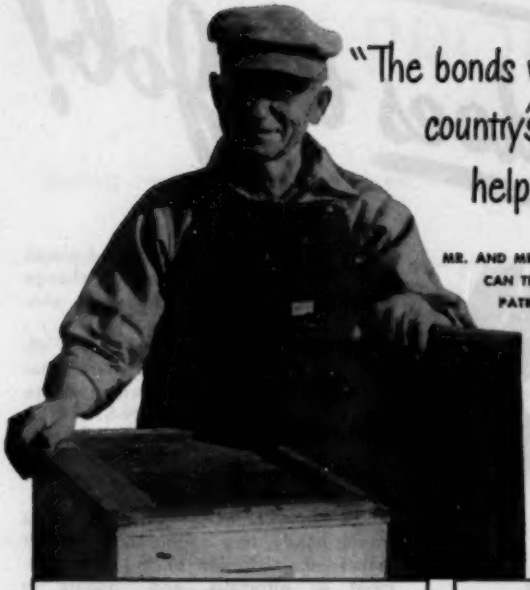
New 3rd edition, standard work on canine genetics, heredity, and breeding—Judy's "Principles of Dog Breeding." $5.00. Keep up on dogs with *Dog World* magazine. Subscription $3.00 a year. Judy Publishing Company, 3323 Michigan Blvd., Chicago 16, Ill.

For Sale—Artificial Insemination Supplies

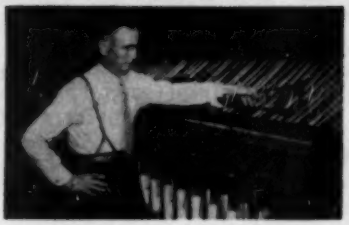
ARTIFICIAL INSEMINATION INSTRUMENTS —Essential equipment, replacement parts and materials, designed and manufactured especially for artificial insemination. Prompt delivery. New catalog. Address: Breeder's Equipment Co., Flourtown, Pa.

"The bonds we bought for our country's defense bought and helped equip our farm!"

MR. AND MRS. CHARLEY I. WHATLEY OF CUTHBERT, GA. CAN TELL YOU—IT'S PRACTICAL AS WELL AS PATRIOTIC TO BUY BONDS FOR DEFENSE



Mr. Whatley inspects a beehive on his 202-acre Georgia farm. "My wife and I wouldn't own a farm, clear, today," he says, "if it weren't for U. S. Savings Bonds. They're the best way to save."



Charley Whatley says, "Mrs. Whatley and I joined the Payroll Savings Plan in 1943. Our pay averaged about $40 a week apiece and we put about a quarter of it into bonds. We had saved $6,925 by 1950."

"$4,000 in bonds bought us our farm and house, more bonds went for a new truck, refrigerator and electric range. We're still holding about $1,800 in bonds. Everybody should buy U. S. Savings Bonds!"

The Whatleys' story can be your story, too!

Your dream can come true, just as the Whatleys' did. *Start now!* It's easy! Just take these three simple steps:

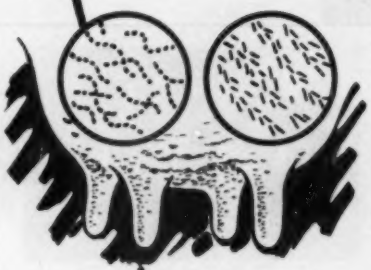
1. Put saving *first* before you even draw your pay.
2. Decide to save a regular amount *systematically*. Even small sums saved this way become a large sum amazingly soon!
3. Start saving by signing up *today* in the Payroll Savings Plan where you work or the Bond-A-Month Plan where you bank.

You'll be providing security not only for yourself and your family, but for the free way of life that's so important to us all.

U. S. SAVINGS BONDS ARE DEFENSE BONDS— BUY THEM REGULARLY!

Your government does not pay for this advertisement. It is donated by this publication in cooperation with The Advertising Council and the Magazine Publishers of America as a public service.

It does the Job!



Among conversational pocket-pieces worn smooth by frequent exchange among practitioners is the short, concise sentence "It does the job!" . . . meaning, "dependable results" or "efficient operation." And these four words are exactly what veterinarians are saying about PENICILLIN-STREPTOMYCIN OINTMENT with SULFONAMIDES **(P2S)** the new multiple action treatment for troublesome Mastitis.

Ask a busy practitioner what he thinks of the handy, new applicator tube that makes administration of this new ointment so effortless, and "dollars to doughnuts" he'll say "it really does the job."

Veterinarians are also enthusiastic about the way PENICILLIN-STREPTOMYCIN OINTMENT with SULFONAMIDES **(P2S)** neutralizes the Streptococcus agalactiae, the Escherichia coli and other organisms which are present in the common cases of mastitis.

Because of its effectiveness as a powerful antibiotic, PENICILLIN-STREPTOMYCIN with SULFONAMIDES, is already a top favorite among doctors faced with the problem of mastitis control. Each 7.5 gram ointment tube contains 100,000 units of Crystalline G Potassium, 50 mg. of Streptomycin plus two synergistic sulfonamides . . . a hard-working **(P2S)** combination that "does the job" thoroughly and efficiently.

HAVER-GLOVER LABORATORIES

Kansas City **Missouri**

Complete Service for the Graduate Veterinarian

PUPPY PROBLEMS

Spring — the natural birth period for puppies — brings conditions most conducive to disease.

Distemper — the most troublesome puppy disease — is ever present; but when susceptible animals are in greatest numbers and conditions are ideal, more serious trouble is inevitable unless proper precautions are taken.

Intradermal Canine Distemper Vaccine (Lockhart) was developed for such problem times. It is produced from tissues richest in virus (those of epithelial origin) selected from subjects pen-exposed to canine distemper, and harvested at the time when virus content is highest. Thus it is a concentrated virus which has been selected with care, and killed for greatest safety.

Intradermal Canine Distemper Vaccine (Lockhart) utilizes two important scientific facts: 1. Tissues of highest virus content are selected for production. 2. Skin is an extremely important organ of anti-body production and body defense.

Intradermal Canine Distemper Vaccine (Lockhart) is a product proved in the laboratory and in the field as an efficient and practical method of canine distemper control. It continues to be the choice of many clinic directors, small animal specialists, and general practitioners.

Intradermal Canine Distemper Vaccine (Lockhart) is a strictly professional vaccine produced by an institution dedicated to the welfare of the veterinary profession. It is designed for use of the veterinary profession only. It is supplied in convenient packages of one and five treatments, has a long dating, and is ideally suited to the needs of the profession.

ASHE LOCKHART, INC.

"Producers of Better Biologicals for Graduate Veterinarians."

800 Woodswether Road Kansas City 6, Missouri

no more virus nightmares...

when you use Jen-Sal Hog Cholera Vaccine (TISSUE ORIGIN)

Let's face it . . . using live virus means plenty of worries for veterinarians. We think you'll do less worrying and keep clients happy too if you switch to *Jen-Sal Hog Cholera Vaccine* for healthy, unexposed swine.

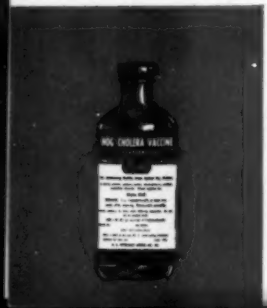
In the past, we've said a lot about the many advantages of Jen-Sal Hog Cholera Vaccine . . . now here's something more: As the *only label-certified, sterile,* tissue vaccine, it absolutely eliminates suspicion of virus over-reactions . . . and danger of infecting healthy swine.

As a further testimony to the reputation of *Jen-Sal Hog Cholera Vaccine,* veterinarians used 80% more last year than in the previous year! Showing that the trend is to *Jen-Sal Hog Cholera Vaccine!*

Jensen - Salsbery

Laboratories, Inc.

Kansas City 10, Missouri



Order from your nearest Jen-Sal depot . . . available in 12 dose, 60 cc. vial (Code: Vivac) and 50 dose, 250 cc. vial (Code: Vilet)